COAL MINING

March, 1956

Volume 33, No. 3

Make it *Highway* from start to finish!

ew Shawmut Coal Co., Hollywood . . . Allis-Chalmers HD-21 backfilling

Whether you're stripping, backfilling or eliminating a water problem, you can do the job faster at less cost with *equipment from Highway.*

Allis-Chalmers • General Motors Diesel Engines • Lima Shovels, Cranes, Draglines • Baker • Thor • Power-Pack Conveyors • Gar Wood • Erie Bins • Michigan Tractor Shovels and Excavator-Cranes • Master • International Vibro-Tampers • Jaeger

Highway

EQUIPMENT COMPANY

6465 Hamilton Ave.
Pittsburgh 6, Pa.

arfield . . . 6-inch Jaeger Motors diesel engines

UNIVERSITY MICROFILMS
313 N 1st ST.
ANN ARBOR, MICH.

High Production and Lower Maintenance–

You Get BOTH with "Eucs"

Built for tough off-the-highway service, Rear-Dump Euclids have increased production and reduced hauling costs on scores of open pit mining and quarry operations. Ability to deliver "plus" performance year in and year out has made "Eucs" the accepted standard for comparison . . . here are some of the reasons why:

RUGGED SIMPLICITY

Designed and built for long life and low maintenance cost. All of Euclid's experience and facilities are devoted to specialized off-the-highway earth moving equipment.

CAPACITY

Euclids have payload capacities of 10, 15, 22, 34 and 50 tons. Because they are matched to various sizes of loading and crushing equipment, "Eucs" provide a well balanced operation for open pit haulage and increase the efficiency of the loading unit.

POWER AND SPEED

Powered by diesel engines of 125 to 600 h.p. "Eucs" have top speeds with full payload, up to 36 m.p.h. Five and ten speed transmission, or torque converter with semi-automatic transmission available. The favorable ratio of horsepower to payload means more pay tons hauled every trip.

VERSATILITY

"Eucs" are efficient for moving any material on any length of haul; handle overburden, rock, coal, ore and other materials loaded by shovels, draglines, transfer hoppers and mobile loading equipment.

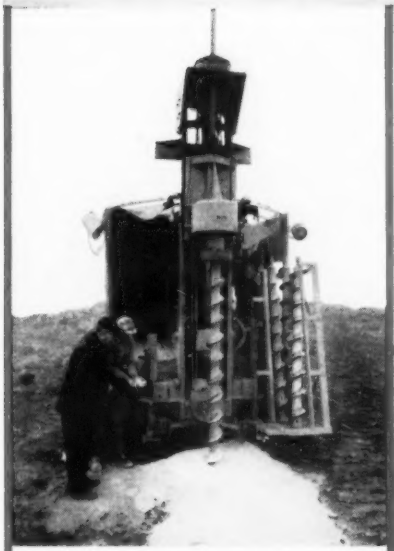
If you are interested in higher production at lower cost, have your nearby Euclid Distributor show you what "Eucs" are doing on work similar to yours. He'll be glad to make a hauling cost estimate for your job—no obligation, of course.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

CUT MINING COSTS
WITH HEAVY – RUGGED – POWERFUL
McCarthy AUGER DRILLS



VERTICAL
MODEL 106-24

World's Fastest Heavy-Duty Vertical Auger Drill

Bores faster, deeper, larger dia. holes than any other auger drill. New gear reduction unit slows auger rotation for operation in hard rock formations. Drills 8" and 9" dia. holes readily in shale and sandstone formations, drills larger dia. holes up to 24" dia. in softer formations.

Write for Bulletin M-100

FINGER-TIP CONTROL

Gives Desired Rotating Speed Of Auger

HYDRAULIC FEED

Provides Any Speed Up To 6 Feet Per Minute Horizontal Feed Of Drill

COAL RECOVERY

"Walks" from hole to hole to auger high-quality Bonus Coal

An Ohio miner removes 300 tons of coal in each 6 1/2-hour working day with this Model 14 36-42 x 12' McCarthy drill, operated by two men. He drills 42" dia. holes 144' deep. Auxiliary conveyor eliminates spillage at hole. It operates on either side of drill for working blind cut. Twelve different models of McCarthy Coal Recovery Drills mine low-cost "bonus coal."

Write for Bulletin M-101 and M-102

HORIZONTAL
MODEL 104

Lowest Drilling Costs per foot, Self-Propelled or Truck-Mounted

Bores up to 12" dia. holes to 150' depth faster, cheaper than any other horizontal drill. Requires less working space, saves many man-hours. . . operates easily in tight, hard-to-reach locations.

Write for Bulletin M-105

THE SALEM TOOL COMPANY

767 SOUTH ELLSWORTH AVENUE

SALEM, OHIO, U. S. A.

SALEM

Printed monthly by Basset Press & Mailing Company, Published by Modern Mining Publishing Co., Executive Publisher P. F. JASIK, 4575 Country Club Drive, Pittsburgh, Pa. Price: in the United States, 2.00; all other countries $5.00. Single copy 50 cents SECOND CLASS mail privileges authorized at Pittsburgh, Pennsylvania.

BECKWITH

MACHINERY COMPANY

output is built right in

WITH BUCYRUS-ERIE INDIVIDUAL DESIGN

Individual Design of the various sizes and models is a big reason why Bucyrus-Erie shovels and draglines are still working profitably in coal stripping operations when others have lost their usefulness. Your stripping or loading applications can use this kind of money-making, long-life performance so get the complete details from your nearest Beckwith Machinery Company location. We have all the facts on Bucyrus-Erie excavators from 3/8 yard to 5 cubic yard capacity. Stop in to see us or give us a call and our shovel specialist will be right out with all the details.

INTEGRITY IN DESIGN

We believe that the right way to build an excavator is to match every part — from boom point to treads — to the specific rated capacity of the machine. At Bucyrus-Erie we call this *Individual Design.*

HERE'S WHAT IT MEANS

Individual Design means striking the right balance between power, weight and speed for sustained high output at low cost *over a long period of time.* Bucyrus-Erie excavators match engine to dipper size so there's no waste of power; deck machinery components are not overloaded or underworked; boom strength and weight are right for the dipper size. There's never any "stretching" of machines to create "new" models — never any overdippering or underpowering.

HERE'S HOW IT PAYS OFF

This kind of design keeps Bucyrus-Erie excavators out front in production, with all parts working in smooth, efficient coordination. It keeps them on the job year after year with minimum down time and maintenance — there is no excess wear and tear on moving parts.

6550 HAMILTON AVENUE
PITTSBURGH 6, PA.—MO 1-6900

P. O. BOX 111
FARRELL, PA.—Ph. SHARON 3572

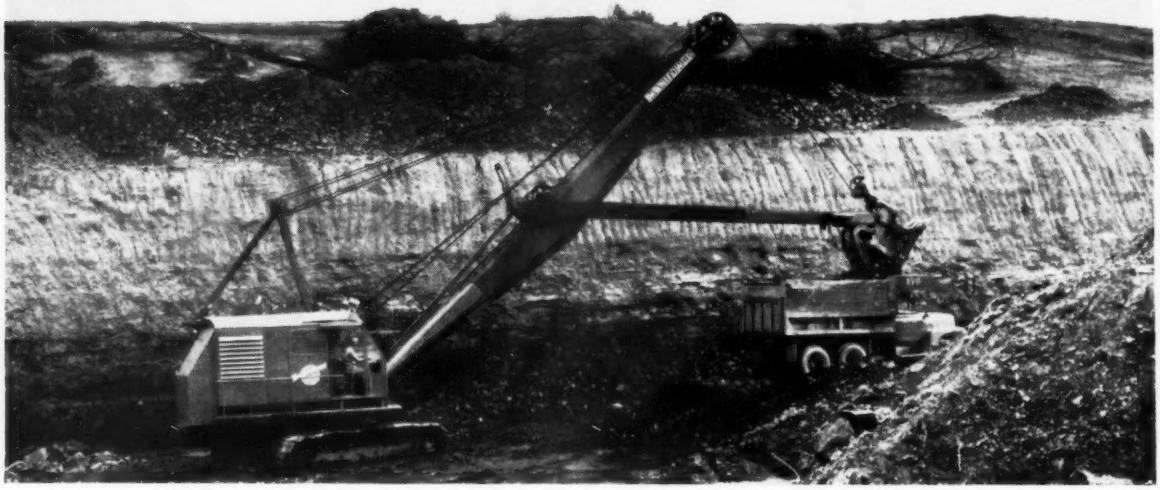
361-369 CONGRESS STREET
BRADFORD, PA.—Ph. 3166

OLD TOWN ROAD
CLEARFIELD, PA.—Ph. 5-9635

1356 EAST 12th STREET
ERIE, PA.—Ph. 4-2494

BUCKHANNON PIKE
CLARKSBURG, W. VA.—Ph. 4-5476

More and More Mines Switch to Manitowoc



Teramana Brothers of Steubenville, Ohio load an average 150 tons of coal an hour with a 2½-yd. Manitowoc 3500 Hi-lift shovel at their strip mine in eastern Ohio.

Wherever there's coal you'll find Manitowoc

Near Clintonville, Pa. Reed Coal Company's 5½-yd. Model 4500 dragline backfills overburden. Note absence of restrictive electrical cables for greater mobility.

You're in good company with a Manitowoc for coal mining! Hundreds of these big capacity machines are getting greater tonnage every shift in pits from Alabama to Pennsylvania. Mine operators everywhere have found Manitowoc Hi-lift shovels and long reach draglines the answer to more profitable operation. Here are just a few reasons why more and more mines are turning to Manitowoc for greater production at lower cost.

TRUE SIMPLICITY OF DESIGN — Fewer gears with only working gears turning for more power at the dipper or bucket.

FASTER OPERATING — Greater cycle speeds, complete maneuverability and fast traveling speeds with the mobility of a small excavator provide top production.

POSITIVE STABILITY — Long, wide crawlers and efficient, rugged design of lower works assures a steady base for full capacity shovel and dragline work under all job conditions.

SMOOTH TORQUE CONVERTER POWER — Engine cannot stall or be overloaded. Digging and stripping is more efficient with power balanced to the load.

Have your Manitowoc distributor give you the complete, profitable story. You'll find there's nothing else like mining with a Manitowoc! Manitowoc Engineering Corp., Manitowoc, Wis.

Distributors:

BASSLER EQUIPMENT CO., Forty Fort, Penna.
ANDERSON EQUIPMENT CO., Bridgeville, Pa.
R. H. SMITH CO., Beckley, West Virginia

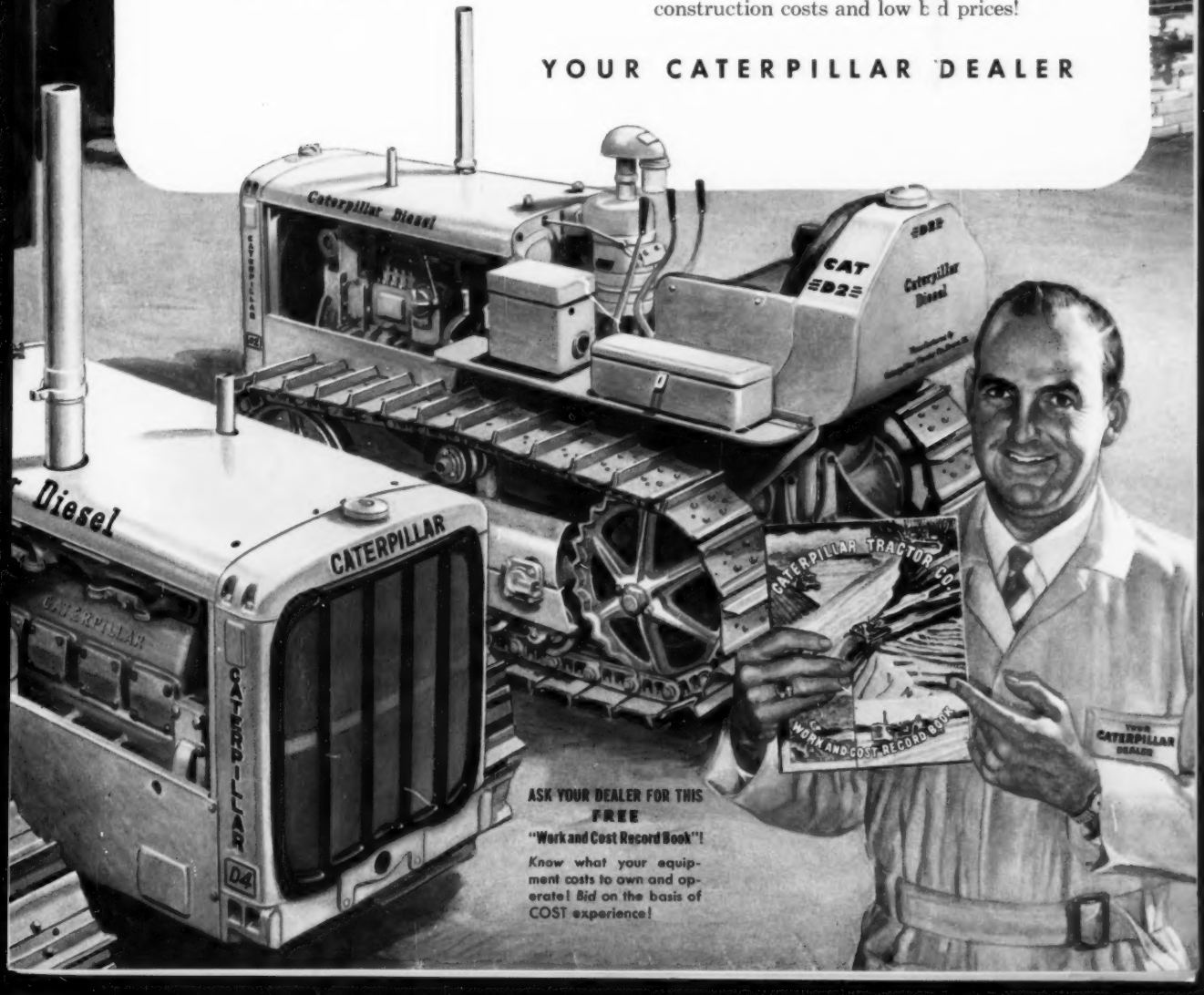
HOW YOU CAN BEAT LOW DIRT BIDS WITH CAT D4 AND D2 TRACTORS

Let's face it! Your cost of doing business is up! Bid averages are down! Yet, successful contractors make a profit, continue to stay in business. They're doing it through the proper selection of machines for the application, and by working constantly to lower their power requirements.

We are in business to help you select the machines that will do the job most efficiently, most economically. You find many applications every day where our two, small, but mighty, tractors—the Cat D4 and D2 Diesel Tractors—can perform in just such a manner.

Let us show you how you can beat high construction costs and low b d prices!

YOUR CATERPILLAR DEALER



ASK YOUR DEALER FOR THIS FREE "Work and Cost Record Book"!

Know what your equipment costs to own and operate! Bid on the basis of COST experience!

SAVE HORSEPOWER . . . CUT INITIAL INVESTMENT...LOWER OPERATING COSTS

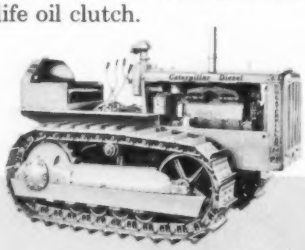
PUT THE D4 AND D2 ON JOBS LIKE THESE!

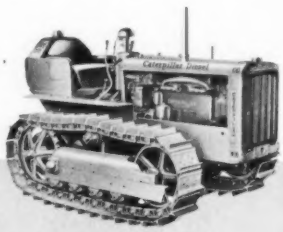
The D4 and D2 applications on these pages are good examples of correct equipment application. By using these tractors on similar jobs, owners fully utilize available horsepower, cut initial investment, and lower operating costs. Let us help you make a careful evaluation of the jobs you're now working on to prove that the Cat D4 and D2 Tractors can do the same for you.

Look at some of the savings . . . check some of the advantages of owning a Cat D4 or D2 Tractor. With double the pulling power of wheel-type tractors of similar horsepower, the Cat D4 and D2 Tractors can often do many jobs more efficiently than much larger equipment. Excellent traction and pulling power make the D4 and D2 particularly useful in pulling rollers, tampers, scrapers, wagons and other trailing equipment. They have greater maneuverability, turn on a shorter radius, feature lower height, lower fuel consumption and a much lower initial investment than larger machines.

NOW...MORE WEIGHT...POWER AND EFFICIENCY TO HANDLE BIGGER JOBS!

The Caterpillar D4 and D2 Diesel Tractors are modern, efficient, high production machines with more weight and power than their predecessors of a few years back. Drawbar horsepower has been increased more than 35% in the D4 and 50% in the D2 since 1947. Both tractors have the long-life, time and money-saving advantages of their bigger brothers: efficient design; rugged construction; quick starting in any weather; effective filtration of air, fuel and oil; and reliable, simple, adjustment-free fuel system that uses low-cost No. 2 furnace oil without fouling. Both the D4 and D2 are available with long-life oil clutch.





BRIEF SPECIFICATIONS

CAT D4 DIESEL TRACTOR		CAT D2 DIESEL TRACTOR	
HORSEPOWER		**HORSEPOWER**	
Drawbar	50	Drawbar	38
Belt	57	Belt	43
MAXIMUM PULL		**MAXIMUM PULL**	
1st gear	10,700 pounds	1st gear	7,950 pounds
OPERATING WEIGHT	10,860 pounds	**OPERATING WEIGHT**	7,600 pounds
ENGINE: Four-stroke cycle, valve-in-head, diesel		**ENGINE:** Four-stroke cycle, valve-in-head, diesel	
Number of cylinders	4	Number of cylinders	4
Lubrication	full pressure	Lubrication	full pressure

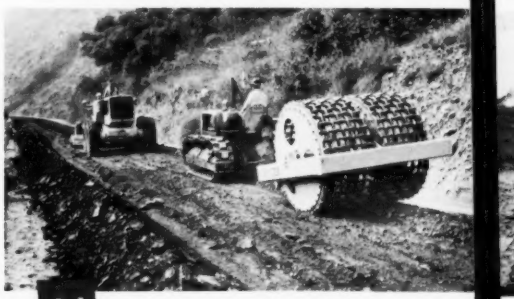
Starting Method: Independent gasoline engine or 24-volt direct electric starting.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

D4 'DOZES HAUL ROAD FREE OF BLAST ROCK

Applications like this call for ruggedness, abundant power and nimbleness.

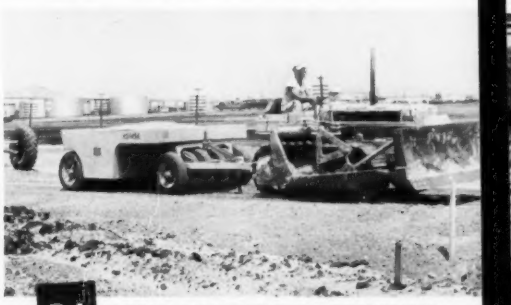


D4 PULLS 12,000-POUND HYSTER GRID ROLLER

Here's proof that the D4 Tractor has the power and traction for tough application.

D2 PULLS SKID LOAD OF PIPE TO RR ROADBED

Hyster winch on rear of D2 adds to usefulness of the tractor on various jobs.



D4 PULLS LOADED, RUBBER-TIRED COMPACTOR

A good example of correct equipment application on big eastern turnpike.

D2 WITH NO. 2A 'DOZER WIDENS OLD ROAD

Old shoulder in this application offers just enough room for the D2's width.

D4 **WITH CAT PD4 PIPE LAYER HANDLES PIPE**
Many useful and productive attachments like this are available for D4 and D2.

D2 **BACKFILLS A SEWER TRENCH QUICKLY**
D2 is excellently suited to this kind of operation because of its versatility.

D2 **TRACTOR PUSHES GRAVEL TO TOP OF PILE**
Maneuverability and low-cost operation make the D4 and D2 ideal for stockpiling.

D2 **TRACTOR PULLS RUBBER-TIRE COMPACTOR**
Effective, dense compaction is achieved quickly and economically with this team.

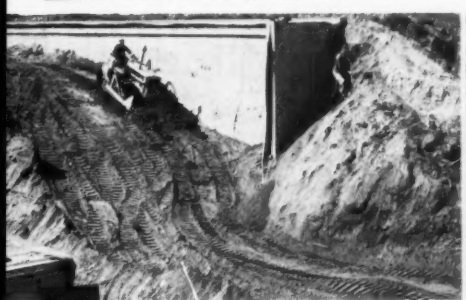
D4 **WITH NO. 4A 'DOZER WORKS CLOSE TO BANK**
Many jobs like this call for smaller, economical power of the D4 Tractor.

D4 **MUCKS OUT TRENCH ON CLOVER-LEAF JOB**
Bigger tractor couldn't maneuver as easily in such cramped, narrow quarters.

D4 **'DOZES SURFACE-TREATED GRAVEL TO FILL**
Heavy load 'dozed by D4 nearly hides tractor. Use it on jobs like these.

D2 **PUSHES CONCRETE PIPE CLOSE TO DITCH**
It's just one of hundreds of different jobs handled by the versatile D2 Tractor.

D2 **LEVELS HOUSING SITE, PILES UP TOPSOIL**
D2 is equipped with Tool Bar 'Dozer. Tool Bar takes many rear-mounted tools.



D2 **'DOZES EXCESS DIRT FROM RESERVOIR SITE**
Tractor is equipped with a No. 2S 'Dozer for this kind of clean-up operation.

D4 **PUSHES ROCK UNDER BRIDGE FOR FILL**
D4 has plenty of power to do the tough job, has low clearance, maneuverability.

D2 **GETS UNDER HOUSE, EXCAVATES BASEMENT**
Low clearance, maneuverability and economy make D2 ideal in close-quarter work.

D4 **REPLACES BIG TRACTOR ON 'DOZING JOB**
Often D4 pinch-hits nicely when heavier equipment is needed on other jobs.

D4 **AND NO. 40 SCRAPER LOAD 4½ CU. YDS.**
Heaped loads like this are common with D4-No. 40 team even when self-loaded.

D4 **PULLS A TANDEM SHEEPSFOOT ROLLER**
D4 application here on road reconstruction job is good usage of machine power.

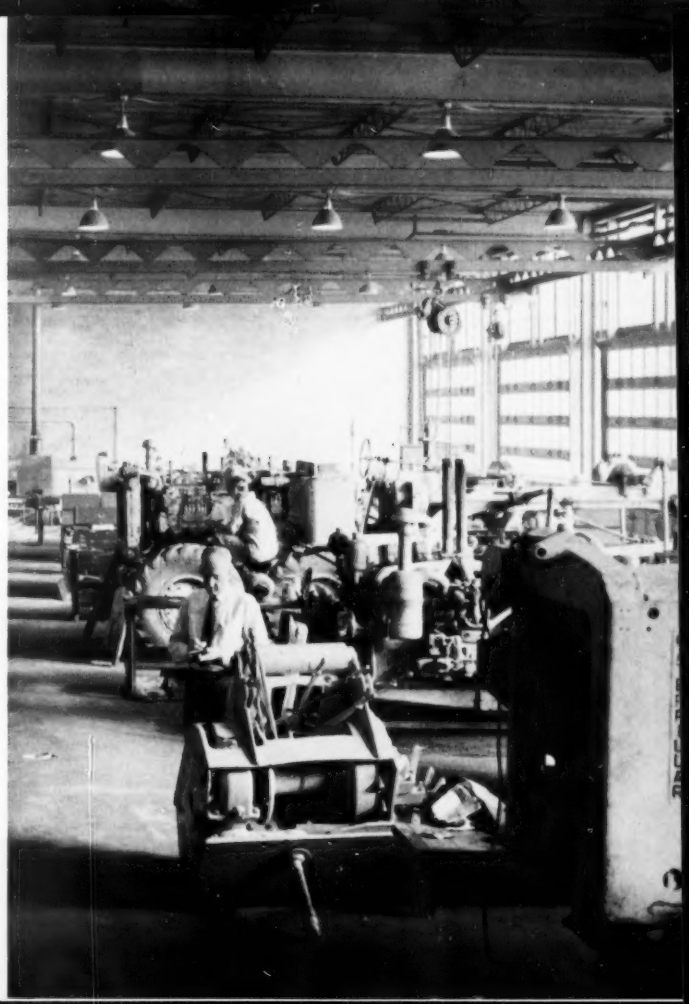
NOW

IS THE TIME TO BRING YOUR IDLE EQUIPMENT IN FOR SERVICE!

From now until spring is the best time for you to bring in your idle equipment for service and repair. We have a large stock of genuine Cat parts. Our trained and experienced mechanics are ready to put your equipment back into A-1 shape for the big spring season ahead. By taking advantage of this lull in your work program, you can be prepared to move in on your first job with no delay.

NOW IS THE TIME TO SEE THE D4 AND D2

While you're in our stores, be sure to see the Caterpillar D4 and D2 Diesel Tractors we've been telling you about on these pages. We'd like to explain to you more fully and show you how and why these tractors can fit into your spread to give you lower construction costs and big production.



SEE YOUR CATERPILLAR DEALER FOR EXPERT JOB ANALYSIS . . . HONEST EQUIPMENT RECOMMENDATIONS

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U. S. ROUTE 250, CADIZ, OHIO • 4000 LAKE PARK ROAD, YOUNGSTOWN, OHIO

WALKER MACHINERY CO.

1545 HANSFORD STREET, CHARLESTON, W. VA. • 4010 EMERSON AVE., ROUTE #2 PARKERSBURG, W. VA.

CM-5

P356A

Printed in U.S.A.

YOUR NEW EQUIPMENT DEPARTMENT

NEW 6-IN-ROW RIPPER HEAD FOR CONTINUOUS MINING IS BEING MANUFACTURED BY THE BOWDIL COMPANY CANTON 7, OHIO

Points of Advantage:

1 The Bowdil Fabri-Forged Chains, with their great strength and flexibility. The strongest chain for its size in the field.

2 The Bowdil Ripper Head utilizes 6 renewable, independently adjusted Cutterbars, making it possible to retain equal tension on all 6 chains irregardless of their length or age, within liberal limits.

3 Special hard-surfaced wearing shoes in heads of Cutterbars eliminating maintenance on roller and bearings as formerly used.

4 All 6 chains are similar in kerf and lacing arrangement for interchangeability.

5 The chains may be run with or without renewable liners in the Cutterbars as desired.

6 Included in the Ripper Head assembly is a special improved design head drive shaft and sprocket assembly, which makes it possible to renew a sprocket in minutes without removing the shaft — (two-piece sprockets are used, held on the double keyed shaft by means of special designed resilient clamping collars, maintaining extreme tension to the shaft.)

7 All 6 sprockets are interchangeable.

8 The rear of the Ripper Head frame is arranged with circular shock seats for the drive assembly which normally clears the drive assembly approximately 1/16" to guard against extreme flexing of the drive shaft at overloads. This avoids breaking the shaft.

9 The Ripper Head is complete — nothing else needed from the gear boxes out.

NEW DUMP BODIES

These special Model OH 12N-3 bodies are 8 ft. long at the bottom and 7 ft. long at the top. Headsheets are vertical and tailgate slopes forward at the top.

Mounted on Model 700 Galion Fulcrumatic hoists, these bodies have a payload capacity of 3 cubic yards. A special cab protector with screened window is used on the Turnpike bodies.

Galion Allsteel, a leading dump body and hoist manufacturer since 1914 operates plants in Galion, Mansfield and Cardington, Ohio.

NEW FRONT DUMP BUCKETS

Live front-dump buckets are offered as extra optional equipment on Models 2-C, 4-C, 6-C, 7-C and 8-C Austin Overshot Loaders, according to an announcement by Austin Division, Central Ohio Steel Products Company, Galion, Ohio.

The live front-dump bucket substantially increases the usefulness of the standard Austin Overshot Loader, the manufacturer states.

Interchangeable with Austin bulldozer and front-end loading attachments, the live bucket is reputed to be easily removed or installed in approximately 15 minutes by pulling and replacing 4 pins.

Bucket position is maintained by one double-acting hydraulic cylinder on Models 2-C and 4-C and by two double-acting cylinders on Models 6-C, 7-C and 8-C. Cylinders are controlled by a three-way valve located in the cab. Bucket tilt is 45°. Hydraulic lines are located inside structural parts for maximum protection, the manufacturer says.

Designed for mounting on Caterpillar D2, D4, D6, D7 and D8 Tractors, Austin Overshot Loaders are available in capacities from 1 to 4 cubic yards. Complete Loaders and all attachments are sold and serviced through Caterpillar Dealers everywhere. For further information, contact local Caterpillar Dealers or write direct to Austin Division Central Ohio Steel Products Company, Galion, Ohio or 2 Santa Fe Drive, Denver, Colorado.

NEW HYDRAULIC ATTACHMENTS

Caterpillar Tractor Co. has announced a completely new set of hydraulic attachments for its No. 12 and No. 112 Motor Graders. They are a hydraulically shiftable moldboard, hydraulically operated snow plow and bulldozer mounting and hydraulically actuated snow ring.

The new shiftable moldboard is concave in shape to allow for the hydraulic cylinder. The stroke of the cylinder is 48 inches with 27 inches of travel to the right and 21 inches to the left. Standard moldboards will be equipped with a slide bar in place of the cylinder to allow for manual offset of the blade.

Improved design and strength are featured in the new snow plow and bulldozer mounting. The cylinder is controlled by a four position valve that allows floating but gives down pressure when desirable.

Two cylinders are mounted on the mast to control the cable that supports each end of the snow wing. This type of control will give greatly increased speed for moving the wing around poles, fences, etc.

Power for the attachments is supplied from a new enclosed hydraulic system similar in design to other Caterpillar hydraulic units and mounted on the front of the dashboard between the frame members. Valves, located inside the reservoir, can be stacked to allow any or all of the attachments to be used together. These valves include the usual raise, lower and hold positions for the snow wing and moldboard cylinders and an additional float position for the snow wing and moldboard cylinders and an additional float position for the snow plow and bulldozer.

Controls for the attachments are conveniently located inside the job.

For More News on NEW EQUIPMENT See Page 21

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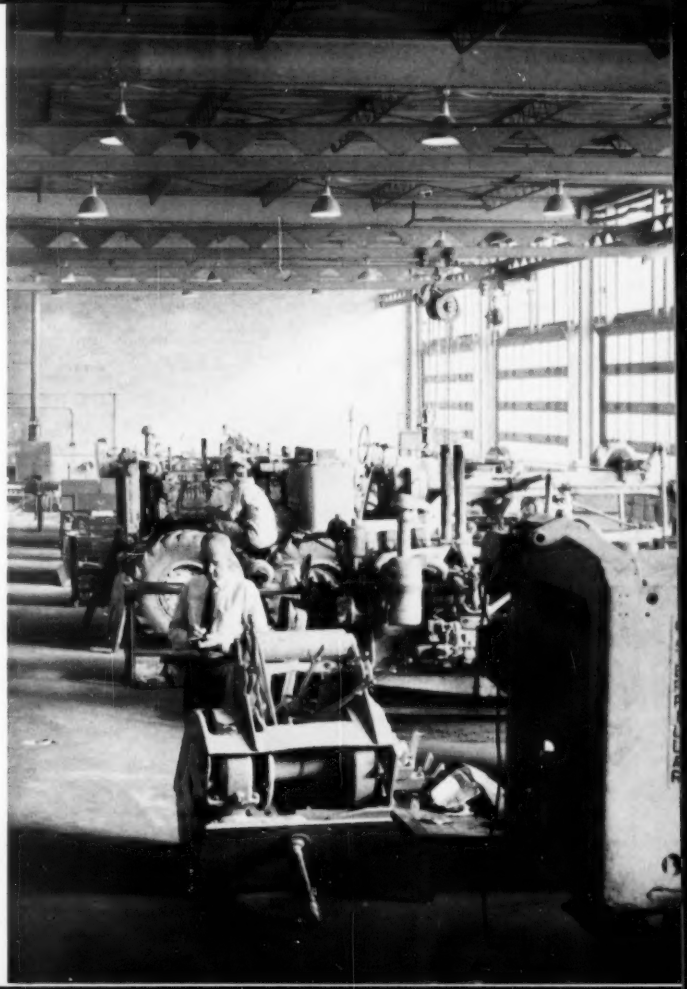

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The live front-dump bucket substantially increases the usefulness of the standard Austin Overshot Loader, the manufacturer states.

Interchangeable with Austin bulldozer and front-end loading attachments, the live bucket is reputed to be easily removed or installed in approximately 15 minutes by pulling and replacing 4 pins.

Bucket position is maintained by one double-acting hydraulic cylinder on Models 2-C and 4-C and by two double-acting cylinders on Models 6-C, 7-C and 8-C. Cylinders are controlled by a three-way valve located in the cab. Bucket tilt is 45°. Hydraulic lines are located inside structural parts for maximum protection, the manufacturer says.

Designed for mounting on Caterpillar D2, D4, D6, D7 and D8 Tractors, Austin Overshot Loaders are available in capacities from 1 to 4 cubic yards. Complete Loaders and all attachments are sold and serviced through Caterpillar Dealers everywhere. For further information, contact local Caterpillar Dealers or write direct to Austin Division Central Ohio Steel Products Company, Galion, Ohio or 2 Santa Fe Drive, Denver, Colorado.

NEW HYDRAULIC ATTACHMENTS

Caterpillar Tractor Co. has announced a completely new set of hydraulic attachments for its No. 12 and No. 112 Motor Graders. They are a hydraulically shiftable moldboard, hydraulically operated snow plow and bulldozer mounting and hydraulically actuated snow ring.

The new shiftable moldboard is concave in shape to allow for the hydraulic cylinder. The stroke of the cylinder is 48 inches with 27 inches of travel to the right and 21 inches to the left. Standard moldboards will be equipped with a slide bar in place of the cylinder to allow for manual offset of the blade.

Improved design and strength are featured in the new snow plow and bulldozer mounting. The cylinder is controlled by a four position valve that allows floating but gives down pressure when desirable.

Two cylinders are mounted on the mast to control the cable that supports each end of the snow wing. This type of control will give greatly increased speed for moving the wing around poles, fences, etc.

Power for the attachments is supplied from a new enclosed hydraulic system similar in design to other Caterpillar hydraulic units and mounted on the front of the dashboard between the frame members. Valves, located inside the reservoir, can be stacked to allow any or all of the attachments to be used together. These valves include the usual raise, lower and hold positions for the snow wing and moldboard cylinders and an additional float position for the snow wing and moldboard cylinders and an additional float position for the snow plow and bulldozer.

Controls for the attachments are conveniently located inside the job.

For More News on NEW EQUIPMENT See Page 21

COAL MINING

Vol. XXXV March, 1956 No.3

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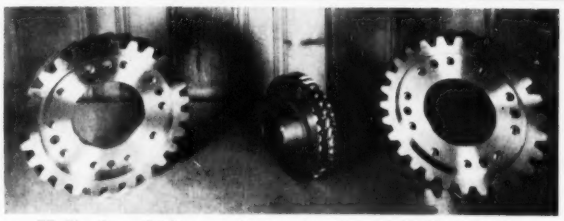
Published by

Modern Mining Publishing Company

Editorial Offices
4575 Country Club Drive
Pittsburgh, Pa.
Phone TU. 1-9411
P. F. JASIK,
Publisher and Editor

Philadelphia Representative
PAUL S. KEISER
1729 Ridgeway Road
Havertown, Pa.
Hilltop 7-1090

Printed by
BASSET PRESS
AND MAILING COMPANY
377 McKEE PLACE
PITTSBURGH 13, PA.



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BRONZE, HELICAL and WORM GEARS
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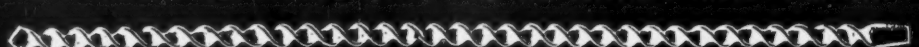
Preble & Adams Sts., North Side, Pittsburgh 33, Pa.
Phone ALlegheny 1-3600

SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS
Made To Withstand High Drilling Speed, Whip And Torsional Strain Of Electric Drills



Drills holes faster — Will not snap off shank or chip points — Outlasts four or five ordinary augers.

THE SALEM TOOL COMPANY **SALEM, OHIO, U.S.A.**

Do You Know?

BONES TRANSPLANTED

Successful and safe transplantation to human patients of bones sterilized by high intensity gamma radiation from radioactive cobalt was announced by Drs. Paul DeVries, Carl E. Badgley and J. Ted Hartman of the University of Michigan, Ann Arbor.

Bone sterilized in this way was used in 80 transplant procedures on 67 patients, of which 62 were spinal fusions. Of these, 76 healed without wound infection and without unusual body reaction. Drainage which eventually healed without chronic inflammation of the bone marrow developed in four patients after the operation.

Although the treatment with radioactive cobalt killed any bacteria and viruses that might have been in the bones, there was no residual radioactivity. The character of the bone and its capacity for further growth were not changed.

The bones, which can be taken from dead bodies, are cut into various shapes and sizes by a heavy duty band saw. They are then freeze-dried and sealed in glass tubes under vacuum.

The radiation comes from cobalt rods held in a cylindrical frame and shielded in a water well within a concrete cave.

To sterilize the bone, it is simply necessary to place the tubes containing the bone within the concrete cave and, by means of a remote control winch, raise the source from its well into the radiation chamber.

At the end of a 20-hour period, the cobalt is returned to the well and the bone removed and stored at room temperature

HUMAN SKIN GARDEN

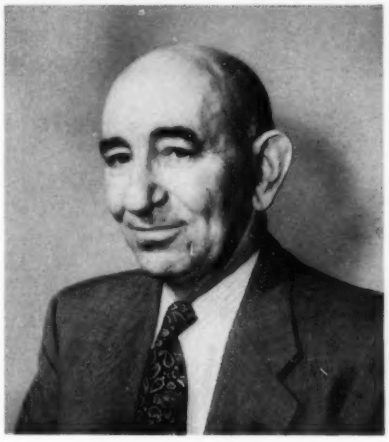
A kind of garden in which living human skin will be grown is being set up at Duke University, Durham, N. C. If successful, it is expected to provide means for saving thousands of lives now lost each year as a result of burns.

A bit of the burn victim's own skin would be set to growing in this or a similar skin garden. In two weeks the piece of skin so grown may be multiplied to 10 times its original size, laboratory experiments have shown. This would give a good size piece of skin for grafting.

For a permanent graft to replace skin burned off, victims must have some of their own skin. Skin grafting from a relative or other donors last only 10 to 30 days. A severely burned patient, especially a child, however, may not have enough intact skin of his own to spare for grafting on the burned area. That is where the skin garden, or skin "growing patch," is expected to help.

This is believed to be the world's first such skin garden and the first recorded attempt to reproduce the patient's whole skin, consisting of both outer layer and true skin, for grafting. The attempt will be made by Dr. Nicholas G. Georgiade, plastic surgeon, in the laboratory of Dr. Duncan Hetherington. The experiments are supported by a grant from Playtex Park Research Institute.

Here and There in the Coal Industry



M. B. GIROD

●U. S. Steel's Coal Division announced Frick District organizational changes in the line with the development of its coal resources in that area. Under the realignment, the properties presently known as Robena Mine will have four separate identities.

The Colvin Shaft's new designation is Robena Mine No. 1, Bowlby Shaft becomes Robena Mine No. 2 and Garard's Fort Shaft changes to Robena Mine No. 3. Also to be operated as a separate unit is the coal preparation plant at Robena slope.

M. B. Girod has been appointed an assistant general superintendent of the Frick District with responsibility for the general supervision of all Robena facilities.

Appointment of superintendents for the three Robena Mines were announced at the same time. Robert Jordan will be superintendent of Robena Mine No. 1. He leaves Bridgeport Mine in Brownsville where he has been superintendent to assume his new post. J. P. Flynn, who has been superintendent of Palmer Mine at Adah, becomes superintendent of Robena Mine No. 2. Superintendent of Robena Mine No. 3 will be J. W. Boyle, formerly superintendent of National Mine No. 3. John Durfee continues as superintendent of the coal preparation plant at Robena slope.

Succeeding Mr. Flynn as superintendent of Palmer Mine will be D. H. Bayard, formerly assistant superintendent of Robena. New superintendent of Bridgeport, succeeding Mr. Jordan, will be L. J. Callahan, formerly superintendent of Ronco Mine at Masontown.

Mr. Girod, a native of Mt. Pleasant, Pa., attended elementary schools there, later studying engineering and mining courses at night. He also served as an instructor in mining classes and for 11 years was examining board clerk for certification to the positions of mine foreman and fire boss. He started his coal mining career in 1912 as a chainman in the Frick Coke Company's engineering department. Advancing to transitman in 1917, he became fire boss at Leckrone Mine No. 2 four years later.

Mr. Girod was assistant mine boss in 1929 when he left Leckrone No. 2 and he served successively as mine foreman at Footedale and Filbert. He became superintendent of Filbert in 1938. On January 1, 1948, he was named superintendent of Robena Mine, his position at the time of his present appointment.

• JOHNSTOWN COAL & COKE CO., of Johnstown, Pa., purchased the Gauley Mountain Coal Co., which operates the Williams River mine in Webster County, W. Va. C. V. Crichton, vice president of the Johnstown Company, announced that the mine will be renamed Crichton No. 5 and will be operated by a subsidiary to be called Williams River Coal Co. He said improvements will be undertaken to expand the mine's present production of about 1,500 tons daily of metallurgical coal.

• HAROLD L. BEATTIE, production engineer, has been appointed vice president, operations, of Elk River Coal and Lumber Co., Dundon, W . Va. An announcement by President J. G. Bradley said Mr. Beattie will hold a similar position with the Buffalo Creek & Gauley Railroad Co., short line subsidiary of the Elk River Company.

69th ANNUAL MEETING
OF THE
COAL MINING INSTITUTE OF AMERICA

W. W. Bayfield, Executive V-Pres. American Coal Sales Asso. was the principle speaker at the Banquet.

Thursday, December 15, 1955

Morning Session, Beginning 10:00 A.M.
W. P. POWERS, President, CIMA Presiding
Annual Business Meeting.

1. Report of Executive Board and Secretary-Treasurer.
2. Report of Committees.
3. Report of Tellers.
4. Election of Tellers for 1956.
5. Election of New Members.
6. Auditors' Report.
7. Address by President W. P. Powers.
8. Program

Paper No. 1—"The Norfolk and Western's Experimental Coal Burning Steam Turbine Electric Locomotive."

By—H. L. Scott, Jr., Mechanical Inspector, Motive Power Dept., Norfolk and Western Railway Company, Roanoke, Virginia.

Discussion.

Afternoon Session, Beginning 2:00 P.M.

Chairman, J. T. RYAN, JR., President, Mine Safety Appliances Co., Pittsburgh, Pa.

Paper No. 2—"Clean Up Problem—Loose Coal and Dust—Mechanical Mining."

By—James Westfield, Assistant Director, Health and Safety, United States Department of the Interior, Bureau of Mines, Washington, D. C.

FOLLOWING IS THE PROGRAM OF THE MEETING
ANNUAL DINNER
Thurs. Evening, December 15, 1955
Ball Room, 17th Floor
Hotel William Penn

Chairman
W. P. POWERS, President, CMIA
Toastmaster
JAMES C. GRAY
Vice President,
Operations – Coal,
United States Steel Corp.,
Pittsburgh, Pa.
Speaker
W. W. BAYFIELD
Executive Vice President,
American Coal Sales Association,
Washington, D. C.

Subject—"Can the Coal Industry be the Architect of its Destiny?"

J. T. Ryan, Jr., Chairman of the Arrangements Committee.

Tickets for the Dinner can be obtained during the meeting from the Chairman of Arrangements, Officers and Managing Directors of the Institute. Price $5.50 plate.

Paper No. 3—"The Safety Ground Sentinel as a Substitute for the Third Conductor in Trailing Cables."

By—B. H. Van Vactor, Chief Engineer, and C. E. Wissinger, Electrical Engineer, National Mine Service Company, Beckley, W. Va.

Paper No. 4—"Improvements in Underground Lighting."

By—R. R. Godard, Electrical Engineer, Frick District, Coal Operating Division, United States Steel Corp., Uniontown, Pa.

Paper No. 5—"Safety and Operating Advantages of Improved Illumination Underground."

By—J. A. Boyle, Chief Mine Inspector, Frick District, Coal Operating Division, United States Steel Corp., Uniontown, Pa.

Paper No. 6—"Shuttle Car Accidents."

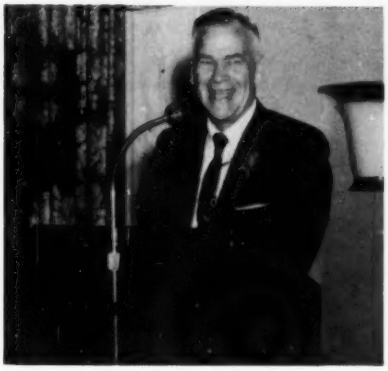
(a) High Coal

By—C. William Parisi, Director of Safety, Pittsburgh Coal Co., Library, Pa.

(b) Low Coal

By—J. Earl Lamont, Safety Director, Sterling Coal Co., Bakerton, Pa.

Discussion.



James C. Gray, V-Pres. Operations-Coal, U. S. Steel Corp. was Toastmaster at the Banquet.

Friday, December 16, 1955

Morning Session, Beginning 10:00 A.M.
Chairman,
J. A. BROOKES, Manager,
Mather Collieries, Picklands,
Mather & Co., Mather, Pa.

Paper No. 7—"The 1955 Campaign to Reduce Roof Fall Accidents."

By—Lewis E. Evans, Deputy Secretary of Mines, Pennsylvania Department of Mines, Ebensburg, Pa.

Discussion.

Paper No. 8—"The Use of Wet Rock Dust in the Continuous Mining Cycle."

By—Wayne D. Snell, Assistant Director—Mine Inspection, Coal Division, United States Steel Corp., Pittsburgh, Pa.

Paper No. 9—"Explosion Prevention by Wet Rock Dusting and Other Measures Near Rapidly Advancing Coal Faces."

By—Irving Hartmann, Chief, Branch of Dust Explosions, Division of Explosives Technology, and John Nagy, Chief, Mine Experiments Section, Division of Explosives Technology, United States Department of the Interior, Bureau of Mines, Pittsburgh, Pa.

Discussion. Papers 8 and 9)

Paper No. 10—"Application of Extensible Belt Conveyors—Continuous Mining."

By—J. S. Mathews, Division Superintendent, Compass Coal Co., Clarksburg, W. Va.

Discussion.

Afternoon Session, Beginning 1:30 P.M.
Chairman,
D. C. JONES, Director, Mineral Industries Extension Services, Pennsylvania State University, State College, Pa.

Paper No. 11—"The problem of Securing Trained Personnel for the Mining Industry in the Future."

D. C. JONES, Chairman

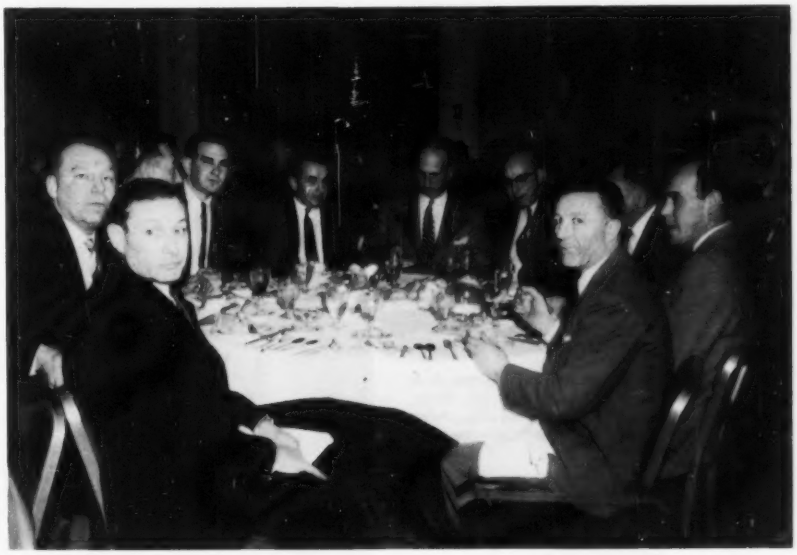
(a) "Engineering and Top Management."
By—J. D. Reilly, Vice President, Hanna Coal Co., St. Clairsville, Ohio.

(b) "Management Control Personnel."
By—J. S. Whittaker, General Superintendent, Pittsburgh Coal Co., Library, Pa.

(c) "Operations, Including Bosses, Mechanics, Etc."
By—G. W. Stump, Assistant Production Manager, Rochester & Pittsburgh Coal Co., Indiana, Pa.

(d) "Training of Operating Personnel in Safety."
By—W. H. Tomlinson, Training Administration Officer, United States Department of the Interior, Bureau of Mines, Pittsburgh, Pa.

Discussion.



Left: Gene Leounzi, Stanley Kosharsky, Pittsburgh Coal Co., L. M. Ferry, Chaffin Mine Gears Co., John E. M. Wilson, Jr., U. S. Steel Corp., T. J. Crocker, Bethlehem Mine Corp., J. E. M. Wilson, V-Pres. Jeffrey Mfg. Co., L. H. Chalfant, C. M. Howard, all with Bethlehem Mines Corp., J. F. Furlong and Virgil Filosi, Pittsburgh Coal Co.

In industry, technical advancement is an integral part of man's progress which, blended with logic and intuition, is essential to his life.

One of the chief reasons for the lethargy in human progress is the slowness in which advanced knowledge is translated into action for our forward progress.

Somewhere, recently, I read: "a strong link of learning from generation to generation is our greatest hope for the future of mankind." A lifetime of participation in learning is becoming a must in human endeavor.

Speaking at an annual awards dinner of THE MOLES an organization of men engaged in marine, tunnel, subway and similar forms of heavy construction, Benjamin F. Fairless, chairman of the executive advisory committee of the United States Steel Corporation said: "Opponents of labor-saving machinery are short-sighted and misguided, because they lack an understanding that the purpose of America's capitalistic economy is to provide everyone with maximum goods and services at a minimum amount of labor."

Left: C. B. Sims, Cardox Corp., Harry L. Brewer, Joe Patellos, Wm. Kebblish, Leanardo DeFelice, Angelo Tosi, Robert Lauder, all with Maties Coal Co., E. J. Servant, Jr., Wm. Morris, Jr., and H. E. Mauch, all with the Olga Coal Co.

Based on population increase trends over the past 75 years, it is estimated that there will be more than two hundred million people in the United States in 1975. While the population is expected to increase greatly and the demand for goods and services is expected to be at least twice what it is today, our working force is expected to be only thirty per cent greater than it is now. On our present basis of operation and methods of production, this nation will be able to produce only about seventy per cent of the goods and services that will be required. Our theoretical answer to this potential shortage of manpower, at the moment, is greatly improved technology, closely coupled with automation. Every technical advance, every new tool, every ingenious invention will have to

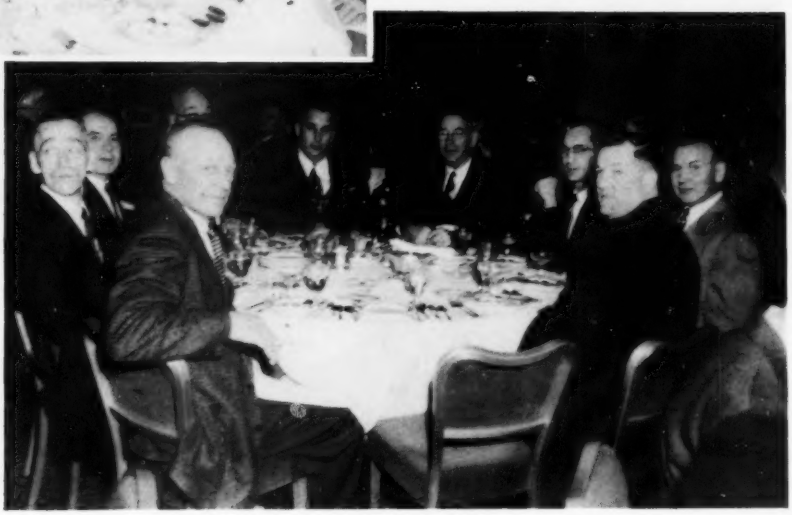
be utilized to step up production to meet increased demands for durable goods.

Because of our advanced knowledge, due to learning, we can do more things with greater assurance of success than we could at any time in the history of mankind. Industrialists have been aware of the fact that the necessary

Left: Jack McKenna, Penna. Dept. of Mines, J. J. Forbes, retired Chief, U. S. Bureau of Mines, Henry Rose, V-Pres. Pittsburgh Coal Co., Allen Brookes, Gen. Mgr. Mather Collieries.

Left: J. T. Ryan, Jr., President Mine Safety Appliances Co., also President of the Institute for 1956. D. C. Jones, Director Mineral Industries Extension Service, Pennsylvania State University. Lewis E. Evans, Deputy Secretary Mines, Penna. Harry Dusz, Chief, Dept. Mines, Ohio.

Left: A. R. Werft, Ch. Eng., Frick Coke Div. U.S. Steel Corp.; K. W. Bartlett, Div. Supt. Bethlehem Mines Corp., H. R. Johnson, District Manager, Mine Safety Appliances Co.; G. N. McClellan, Supt. Isabella Mine, Wierton Steel Corp., J. S. Whittacker, V-Pres. Pittsburgh Coal Co.



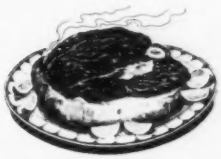
Left: S. A. Andrejko, Jr., U. S. Bureau of Mines; Geo. J. Steinheiser, Olin S. E. Conrad, J. M. Black, J. M. Fitzsimons, O. E. Conrad, Allegheny Ludlum Steel Corp., C. E. Albro, G. E. Service Shop, C. F. Markle, Mathies Coal Co.

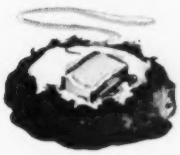
production of durable goods could be accomplished in a fraction of the time now required.

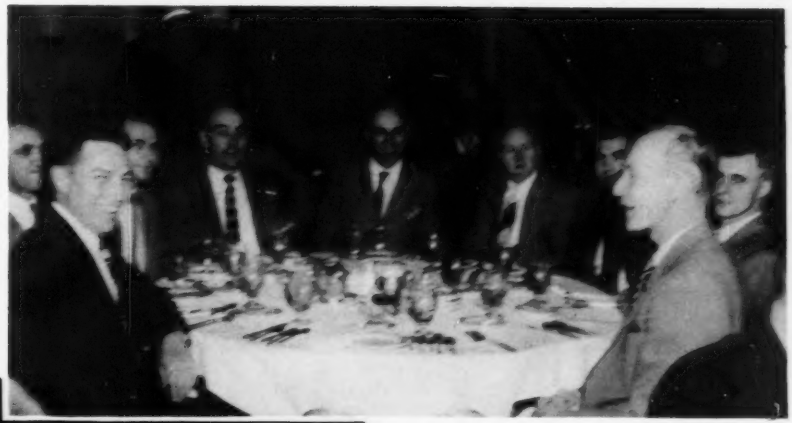
Time saved over our present methods of production would allow us to devote part of that time to carefully planned programs of mass education and to periods of recreation.

Left: Harrold Sager, Owner, Victoria Coal Co., Al Cunningham and Wm. Lake, Pittsburgh Coal Co., Jim Younkins, Gen. Supt., Duquesne Light Co.

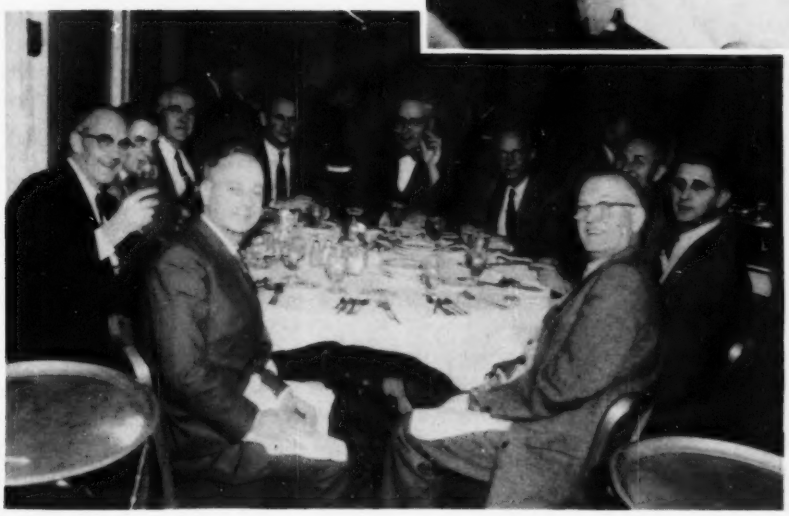
Left: Geo. Rigg, Mgr. Mines, Wierton Steel Corp.; Geo. Sambrook, Dir. Safety, U. S. Steel Corp.; J. D. Riley, James Reilly, V-Pres. Hanna Coal Co., D. L. McElroy, V-Pres., Sam Cassidy, V-Pres. Pittsburgh Consolidation Coal Co.; J. E. Norton, Pittsburgh Consol. Coal Co.







Left: Earl Lamont, Sterling Coal Co., G. P. Resick, John Mlakar, John Kelly, all with the Pennsylvania Dept. of Mines; Nick Molnar, Asst. Mine Foreman, Thomas Harris, Mike Zeanchock, Charles Callahan, all for the Sterling Coal Co. and Charles Barnhart, Mine Safety Appliances Co.



Left: Robert T. Davis, Hal Engel, Joe Coleman, Robt. S. James, M. L. Davis, W. H. Tomlinson, W. J. Feno, W. Dan Walker, Jr., W. M. Demkowicz, W. L. Lyon, all with the U.S. Bureau of Mines.

SAFETY AND OPER
C
IMPROVED ILLUMINA

I have had the opportunity to address this group on several occasions; however, the discourse I am about to deliver today differs from those in the past in one very essential aspect —that being the fact that this topic is not one concerning things accomplished, past experiences, or, if you please, established fact. Rather it is one that concerns a new objective in our organization — an experiment in its infancy. That goal is the provision of improved illumination underground, giving our coal miners, as nearly as possible and practicable, the same lighting in which to do their work as one would expect to find in other industries.

In describing coal mines to others I have often portrayed them as cities and towns underground, with main highways, streets and cross streets, utilities, stores and shops. To complete such an analogy, one would have to say that these are cities and towns of perpetual night.

The safety of the employees of the Coal Operating Division of United States Steel Corporation, and its predecessor company, the H. C. Frick Coke Company and associated companies, has for many decades been a primary consideration. The enhancement of our safety program through improved methods and equipment likewise has had similar emphasis. From its very inception the safety program in this organization, with its basic tenet "Safety the First Consideration," has brought about through the years a virtually uninterrupted reduction of accident frequency, reaching a new low for eleven months of the year 1955 of six and three hundredths accidents per million man-hours worked, as indicated on the following graph. Associating such an accident frequency with coal mining would have staggered the imagination of any of our predecessors.

Our program of safety in and about our coal mines has encompassed many and varied approaches to the problem. I believe that I can say with complete

TING ADVANTAGES

TION UNDERGROUND

By J. A. BOYLE
Chief Mine Inspector

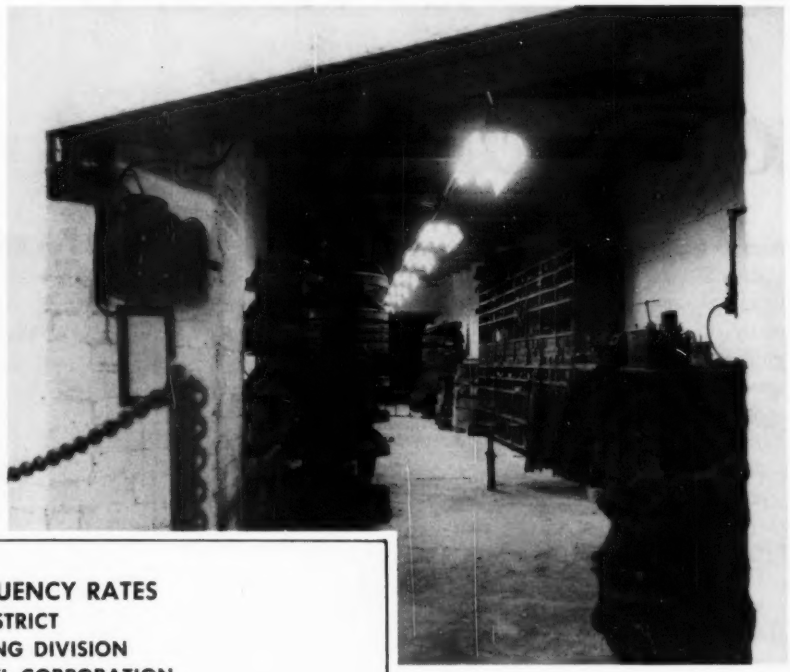
honesty that we have used all conventional methods known and practiced throughout the industry and too, many others that I believe have been pioneered within the organization. It must be said, however, with the exception of one isolated instance, illumination as an approach to an improved safety performance underground is a phase still largely unexplored. This is not to say that the lighting of our coal mines is substandard as compared with the rest of the industry — you would find the converse to be true. However, to date our progress in underground illumination has been to the greatest degree a function of the progress of the industry as a whole together with associated and interested manufacturers.

It should be recognized that until quite recently, the year 1953 to be exact, the mining laws of the Commonwealth of Pennsylvania prohibited the use of a continuous burning lamp underground in gaseous coal mines during preshift examinations and the blasting of coal. While some may readily be critical of such law, it must be remembered that the penalty incurred by the individuals affected was held by those who wrote the statute, and rightfully so, to be subordinate to the desired end result; that is, greater assurance of the detection of gas. Advancements in coal mining technology have obviated the need for such stringent measures.

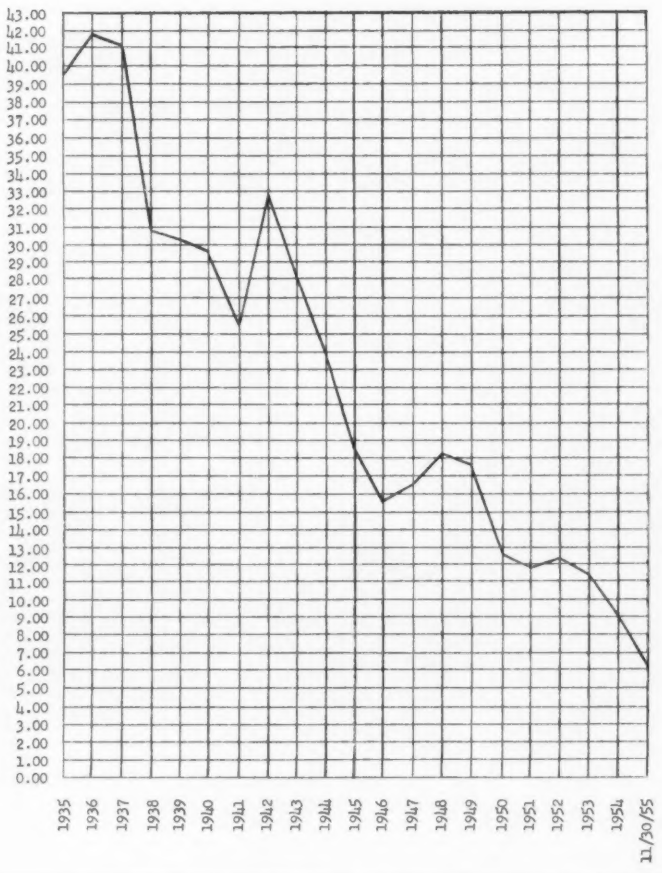
In relation to the foregoing, I recall the day when a safety lamp in gaseous coal mines was our only means of illumination. Without wasting words, I can say that only actual experience can adequately demonstrate the handicap

that miners worked under in those days. While workers in nongaseous mines were afforded relatively better illumination by the use of the oil lamp and the carbide lamp, there was no relief for the workers in gaseous coal mines until the advent of the electric cap lamp in the year 1915. The invention of the electric cap lamp was unquestionably one of the great forward steps in the coal mining industry because it offered the miner the opportunity to do his work with a far greater degree of security and comfort than previously afforded him.

The electric lamp was modified and improved from time to time through the ensuing years, but despite these



YEAR-END FREQUENCY RATES
FRICK DISTRICT
COAL OPERATING DIVISION
UNITED STATES STEEL CORPORATION



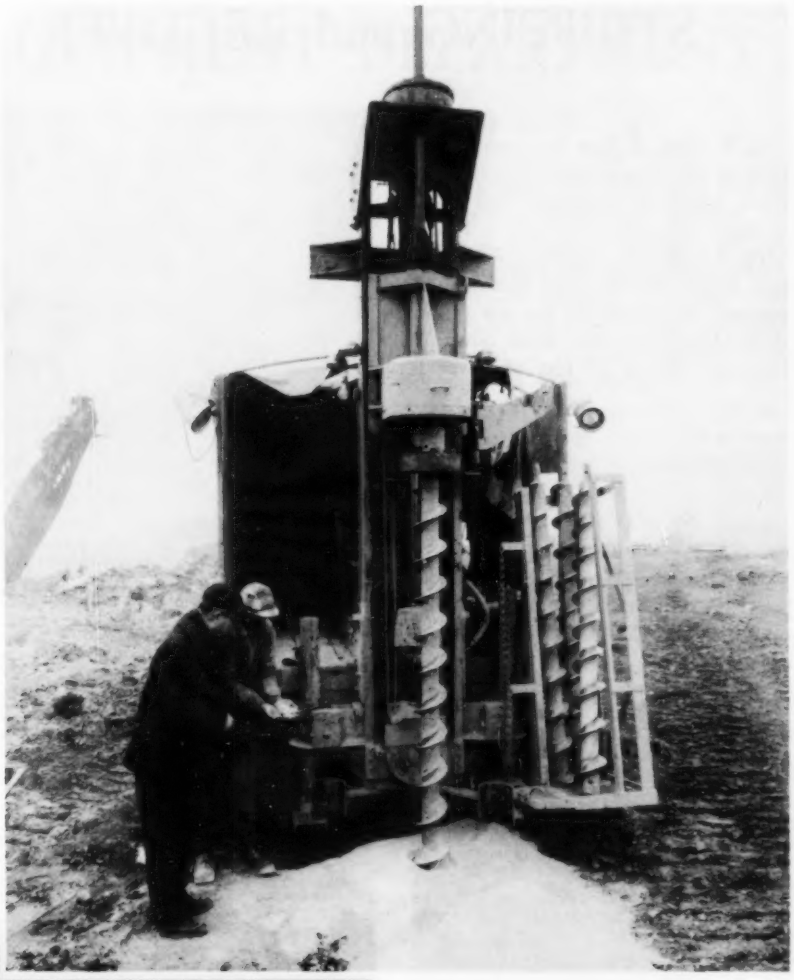
improvements and too, the incorporation of lights on modern face equipment, underground illumination has not kept pace with the advancements in the design of modern mining equipment and improved techniques of the industry.

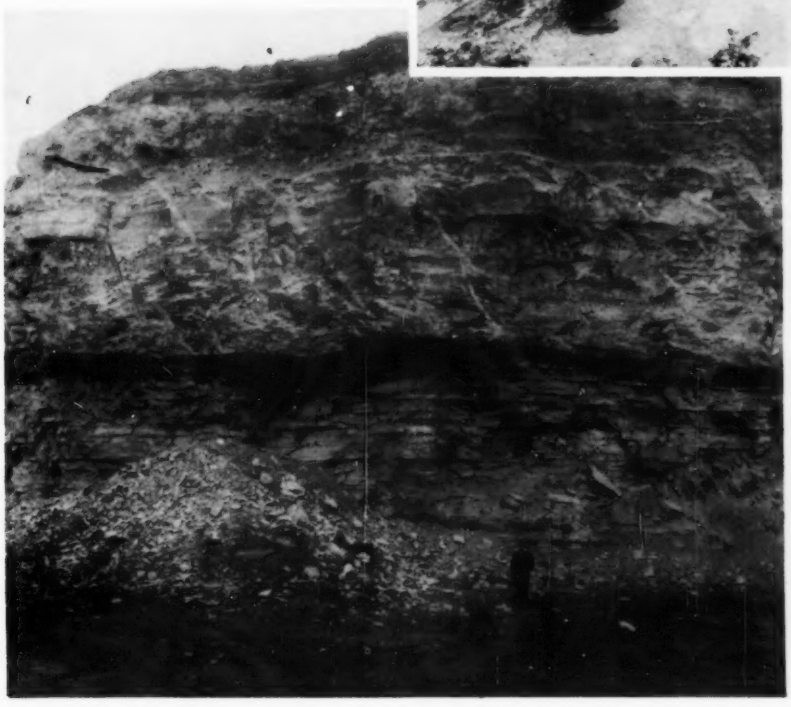
Recognizing this fact, the management of the Coal Division of the United States Steel Corporation has set out to see what can be done to remedy this situation. We have prevailed upon the personnel of the United States Bureau of Mines to formulate a schedule of permissibility for face lighting equipment, giving manufacturers the opportunity to develop a method of illuminating face areas with fluorescent lights. An expanded program of research work aimed at better haulage lighting has been started.

Pursuing this course to its ultimate conclusion will result in giving coal miners the advantage of the best possible illumination underground, which in turn should give us equal opportunity to become competitive accidentwise with the best of other industries. The basis for this statement is the fact that our accident experience in the working spaces underground in which we are

(Continued on Page 23)

DRILLING OVERBURDEN FOR SHOOTING AT HARMON CREEK COAL COMPANY





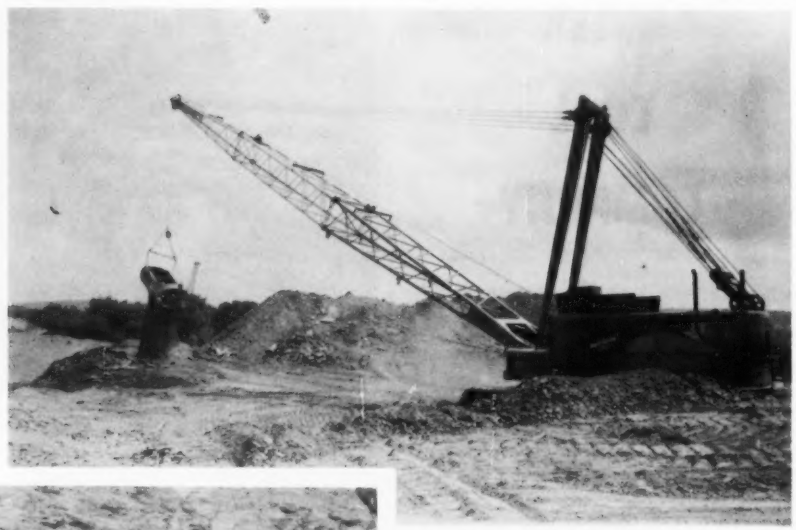
Harmon Creek Coal Company operates in the Pittsburgh seam of coal in Washington County, Pennsylvania, about 20 miles West of Pittsburgh. This is one of the oldest strip operations in the Pittsburgh area and over the many years has tried various types of shot hole drills. At present the overburden on its coal runs about 60 feet thick and consists of top soil, shale, sandstone and limestone containing silica ball. This overburden is now being drilled with a new McCarthy drill having six foot flights of an eight inch drill fitted with Hardsorg ½ by ½ by 3 inch Molefoot bits. Up to 300 feet of 888 of holes is being drilled per shift, depending on the number of silica balls encountered in the limestone.

C. V. FINK & SON USES COMBINATION STRIPPING and RECOVERY AUGERING

C V Fink & Son has two operations in the Central Pennsylvania Coal Field, North of Potterdale. The larger of these operations he uses a Model 4500 Manitowoc dragline with 120 foot boom and six yard bucket. The overburden consists of top soil yellow shale, sandrock, blue shale down to the coal. Up to 65 feet of cover is moved with the dragline at this operation. At the other operation a Lime Model 1201 dragline is used to strip up to 35 feet of overburden which also consists of top soil, yellow shale with some limestone interspersed. After maximum cover is reached, the seam is augered with Hardsocg Recovery augers. The augering is hired out on a tonnage basis to men who auger and haul the output.

The Hardsocg Recovery drill working in pit of the smaller operation where the seam of coal is lower.

The Lima 1201 stripping at the smaller operation.



The Manitowoc Dragline Stripping overburden at the larger operation.

One of the Hardsocg Recovery Augers working in a pit at the larger operation.

YOUR NEW EQUIPMENT DEPARTMENT

MINE SAFETY APPLIANCES

A clear acetate visor which gives excellent frontal and side face protection against abrasive particles, flying objects and chemical splashes, has been developed by Mine Safety Appliances Company, Pittsburgh, Pa.

Called the M-S-A Skullgard-Faceshield, it can be attached to any M-S-A protective hat without marring the hat and can be installed or removed in seconds. An aluminum pivot arm permits the shield to be swiveled up or down in any desired position. The visors are easily detached from the pivot arm for replacement.

A complete description of the new Faceshield has been published in a two-color illustrated bulletin, Number 0302-4. Copies may be obtained from Mine Safety Appliances Company, 201 N. Braddock Avenue, Pittsburgh 8, Pa.

TWIN PIN CONNECTING LINKS

This new, low cost TWIN-PIN CONNECTING LINK has been designed to provide unbelievably fast and strong chain repairs. Quickly installed, using only a hammer, this new, easy-to-use repair link is so rugged and simple that anyone can now make chain repairs within 5 minutes time **right on the job.** Designed by Page Engineering Company, this repair unit is also used as a means of joining the load line to the hitch plate extension and, in larger buckets, as a connection to the trunnion link.

HOW IT WORKS — Formed of two interlocking and identical halves, each half is inserted through the ends of the two sections of chain to be joined together. The TWIN - PIN LINK is then slipped together into its locking position and two oval pins are driven into place. A U-shaped key pin is then inserted into the oval pins which holds them securely in place. The open ends of the U-pin are then hammered or clinched together, thus forming an unbreakable repair link. When used as a connecting link between the load line and the hitch plate extension, and as a trunnion link connection, only one-half of the TWIN-PIN LINK is used. This half is combined with a corresponding fitting on the extension end ring or the hoist trunnion link, and the same easy assembly procedure is followed.

(Continued on Page 24)

NEW REAR DUMP TRAILER

Athey Products Corporation, Chicago, Ill., with more than 32 years experience in the field of trailer building, announces the new Athey PR 15-Cat DW 15 Rear Dump Trailer. The PR 15 offers a capacity of 15.6 cu. yds., speeds up to 31.3 MPH, right or left angle turns of 90° and simply designed, 3-stage hydraulic hoists which tilt the body 60° for quick, positive ejection of any materials.

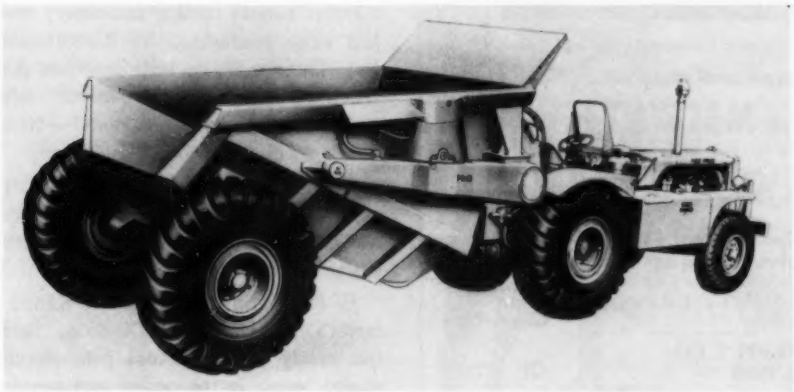
The entire loaded unit weighs 84,683 pounds with 37% of the load on big drive wheels of the Cat 186 HP Tractor. Engine, tractor, trailer and tires are matched in design to provide low cost performance.

Body is all-welded into one sturdy unit built to handle rock or any other material. Premium, high-tensile steel side plates of ⅜". Bottom is of ½" steel over 1-¾" solid oak plank filler over 5/16" lower plate. Body is completely reinforced with box sections.

High speed, large capacity pump, flow control valve and double-acting jacks team up to give quick, positive, accurate hydraulic control. Dumping can be accomplished on the go. Discharge lip extends well beyond rear wheels to cast loads over edge of fill. Four wheel, air-actuated brakes for tractor wheels and trailer wheels can be set individually depending upon footing at fill.

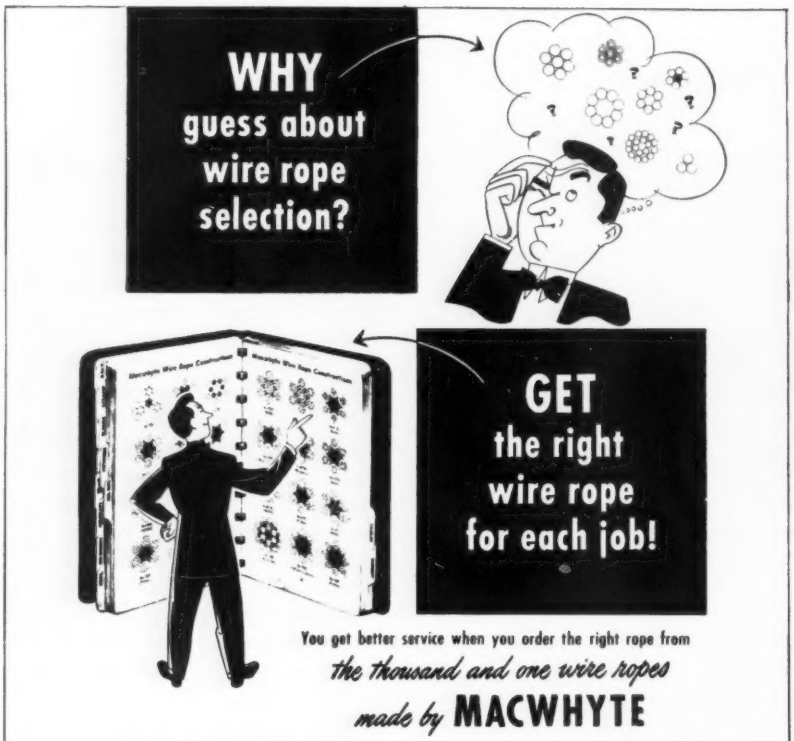
PH 15 turns easily in narrow quarters. Non-stop turns in 37'. Positive hydraulic steering gives passenger car ease for less operator fatigue.

Large, single tires are interchangeable with tractor driver and trailer. Size 21:00-25, 24 ply rock-type tires provide flotation and traction for work in soft ground. Wheels equipped with tapered roller bearings to take radial and thrust loads.



P. R. 15-Cat DW 15 Rear Dump Trailer

Using Twin Pin Connecting Links



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Northeastern and Zanesville Supply Companies are also headquarters for The Jeffrey Mfg., Manufacturers of Chains, Sprockets, Conveyors, Crushers, and Vibrating Equipment.

Stocks of Diamond Roller Chains, Sprockets and Flexible Couplings, Conveyor Belting and all sizes and types of friction material are available from stock.

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Branch: ZANESVILLE SUPPLY CO.
75 Maysville Pike Zanesville, Ohio GL. 2-7601
(Also Headquarters for MacWhyte and Diamond Chain Co.)

TWIN PIN

(Continued from Page 21)

CONSTRUCTION FEATURES—This unit, because of its design and construction, can be used over and over again. Its 2 pin construction assures an equalized pull, thus eliminating entirely the possibility of uneven tension snapping or breaking the link. The oval shaped pins permit no turning or slipping, thereby removing all wearing action. The unique design of the interlocking halves quickly permits each half to be slipped through the chain links that are to be joined together.

TWIN-PIN CONNECTING LINKS are made of high manganese steel, assuring long-wearing and trouble-free operation. They are available in a complete range of sizes from 1 to 3 inches. End links with TWIN-PIN fittings are available in 1-½", 1-¾" and 2" sizes.

Write PAGE ENGINEERING CO., Clearing Post Office, Chicago 38, Illinois for illustrated catalog CSL-754.

NEW EQUIPMENT

A new design in tool bits produced for mechanical mining machinery has just been announced by Kennametal Inc., Latrobe, Pa., which describes the redesigned material — evolved over a period of several years years — as a "radical" change.

The bits are used on coal cutting chains and continuous miners, such as the Joy Continuous Miner, the Jeffrey Colmol, Compton and others.

E. H. Johnson, manager of Kennametal's Mining Tool Division, said the newly designed tool bits match recent boosts in the power and speeds of cutting equipment used in the min-

ing industry. The tungsten-carbide material also provides longer tool bit life and lower operational costs.

The major change is a relief panel design, which provides better side clearance and permits use of straight line secondary front clearance.

Outstanding features are:

1. Optimum clearance angles on radial cutting. On ripper cutting, additional clearance results in a smoother operation.
2. A straight line relief which places additional steel beneath the tip.
3. Less steel to remove during regrinding.

With the top of the redesigned bit head at an angle, the carbide can be mounted with a normal rake angle more smoothly than had been possible with the old design.

One of the more practical advantages of the redesigned tool bits, according to Mr. Johnson, is that there is less steel to remove in regrinding. By reducing the amount of steel removal, there is a reduction in the time required to sharpen the bit — standard procedure dictating that the steel be ground before the carbide. The remaining steel is in the form of a beam and provides ample strength.

Kennametal is producing all types of cutter bits with this relief panel design. Choice of the bit to be used depends on cutting conditions and the machine used.

"Basic differences between the new and the old designs," Mr. Johnson said, "is a rescess panel on the side that allows the formation of a straight line secondary front relief angle on the carbide tip and steel."

"Using a straight line relief allows more steel to be placed directly under the tip, providing better support. In addition, the recess panel gives additional side clearance for the bit and allows it to be used on radial type machines where bits rotate rather than rip vertically."

The redesigned bits are produced at Kennametal's Bedford, Pa., plant.

(Continued from Page 18)

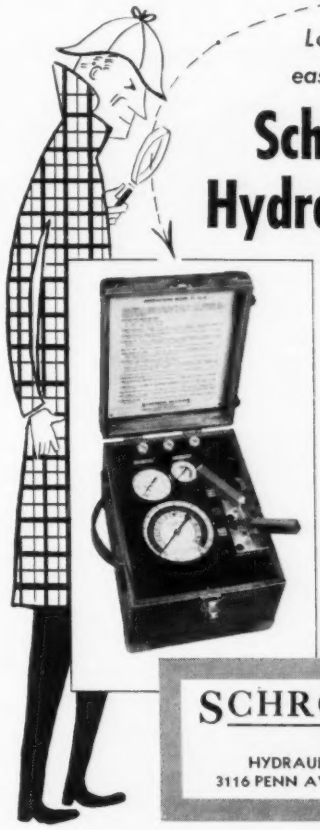
SAFETY AND OPERATING ADVANTAGES

able to provide adequate illumination compares favorably with that of our outside shops. For example, I cite the motor barn in Robena Mine where all the maintenance work on the locomotives accommodating a 24,000-ton operation is done. No lost-time accidents have been experienced in this motor barn during the past ten years. I have included three photographs of the motor barn and the adjoining supply house to illustrate the existing lighting equipment.

At this point I ask your indulgence while I give what I consider a practical demonstration of the trend toward improved illumination .

In summation I believe it can be safely stated that the improvements in mining equipment and methods of ventilation, roof control, dust control and drainage have brought the coal mining industry closer to other industries in developing standard working conditions. It would follow that with the provision of improved illumination, the final obstacle would be surmounted. As a result, this improvement in working conditions, the better housekeeping that would certainly follow, could only contribute an improved performance safetywise as well as productionwise.

It is not beyond the scope of my imagination to visualize mechanical sections lighted from the loading points to the working faces, as well as the general lighting of mine haulage roads. It is my thought that improved illumination underground warrants the complete support of responsible coal mining companies, in addition to the manufacturers and interested governmental agencies. The undivided support of this endeavor will be rewarded in higher work standards and an improved accident frequency rate — both of which should finally be reflected in an improved economic performance of the industry.



Locate the trouble quickly — easily in your hydraulic system

Schroeder Portable Hydraulic Circuit Tester

The new Schroeder Hydraulic Circuit Tester speedily checks the operating efficiency of your hydraulic circuit components.

Weighing only 19 pounds it is housed in a convenient, sturdy carrying case, size 7″ x 11″ x 8¾″ and can be carried without effort to the machine location. After the proper connections are simply made, by rubber hose, the tester simultaneously measures the temperature, pressure and flow from the component port under test. The unit has a pressure range of 300 to 2000 PSI and a maximum flow of 50 GPM.

Check out your hydraulic system's operation—order a Schroeder Portable Hydraulic Circuit Tester today — literature and prices on request.

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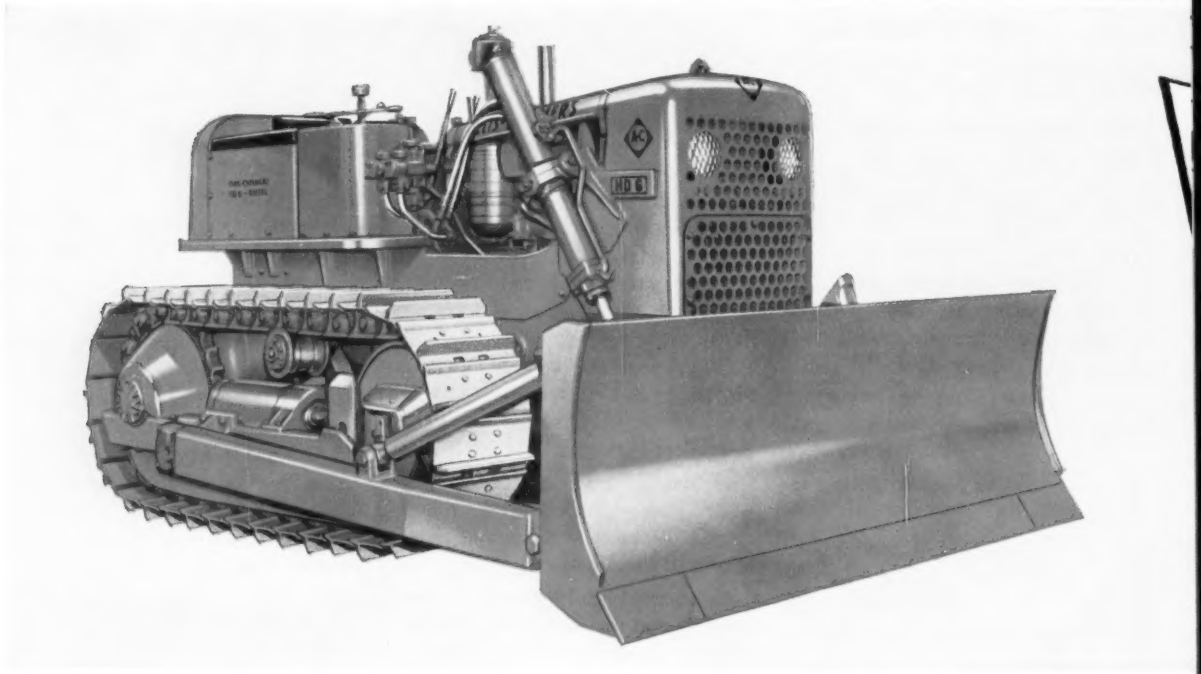

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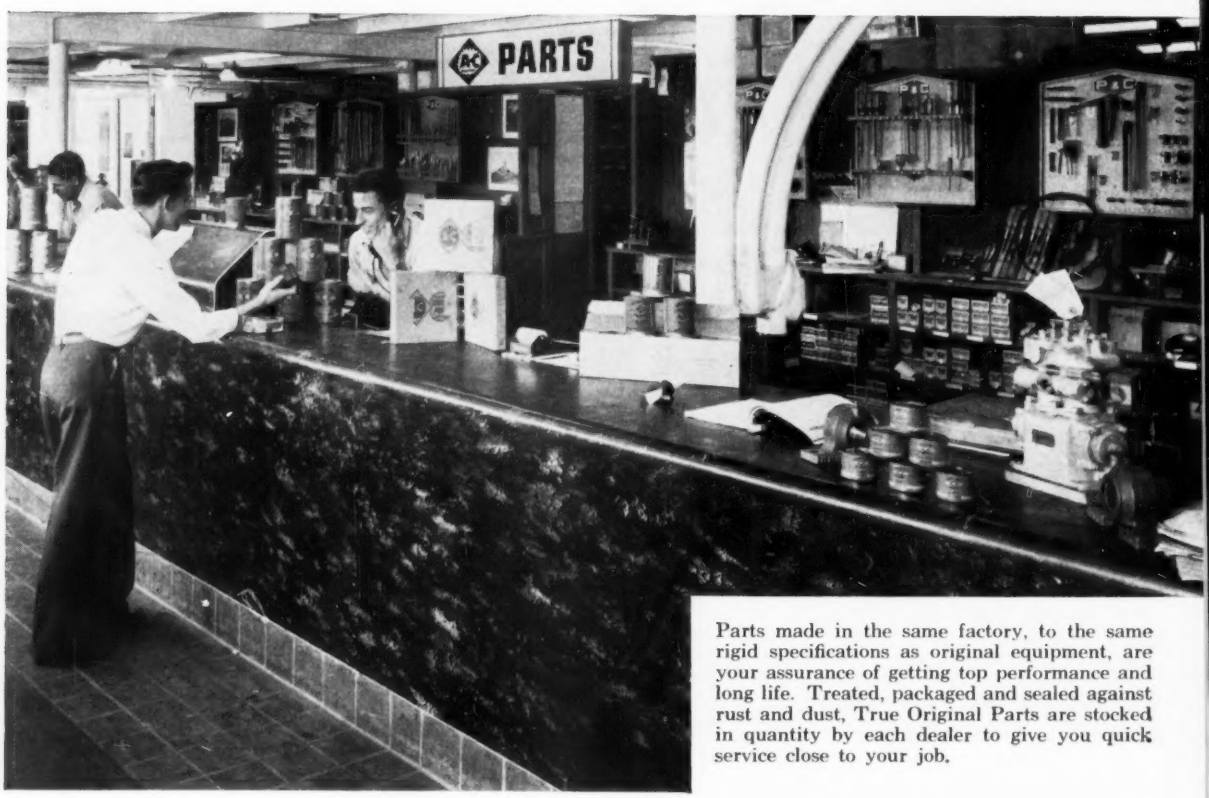
from your Allis-Chalmers dealer



Parts made in the same factory, to the same rigid specifications as original equipment, are your assurance of getting top performance and long life. Treated, packaged and sealed against rust and dust, True Original Parts are stocked in quantity by each dealer to give you quick service close to your job.

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When you invest in Allis-Chalmers equipment, you are getting far more than just a modern machine. Your dealer offers you the opportunity to do a better job at lower cost. He wants your equipment to give A-1 performance day in and day out. His reputation depends on it.

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and you can have confidence in his

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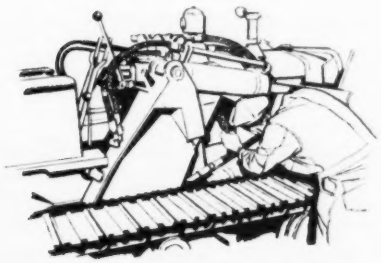

IN THE SHOP

Specialized facilities include factory-approved tools and all necessary equipment for complete service. Factory-approved methods are used to save you time and money, assure finest workmanship.

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HYDRAULIC STARTER

A new hydraulic starting system for Diesel engines, which assures split-second starting even under adverse weather conditions, has been developed by General Motors. The unit has been tested in the field for some time and is now available for installation on new G M Detroit Diesel engines at the factory or on others already in operation.

The new system, called the General Motors Hydrostarter, eliminates many replacement and maintenance costs common to conventional starters. Its efficiency is not affected by temperature, humidity or altitude. In zero temperatures for instance, the unit attains cranking speed almost instantly.

At the press of a lever gas pressure built up behind a piston in a factory-sealed accumulator cylinder forces oil through a hydraulic starting motor. When the engine starts, an engine-driven pump forces the oil back into the cylinder, recompressing the gas and the unit is thus automatically recharged for the next start.

The initial charge is accomplished by means of a hand pump. The unit is then self-sustaining, but the hand pump is available for recharging the cylinder if it should become necessary. This pump can also be used to advantage in "rolling" the engine slowly to various positions when valve, injector or other engine adjustments are made.

A bochure describing the Hydrostarter and its operation in detail is available by writing the Detroit Diesel Engine Division, General Motors Corporation, Detroit 28, Michigan.

COMMUNICATION and CONTROL

TROLLEYPHONES
Most widely used communication for underground haulage.

AUDIOPHONES
Finest communication between control points in cleaning plants.

CONTROLS
Save time and money by remote control of pumps, fans, sub-stations, etc.

Femco systems were first in the mines and are today first in quality and dependability.
Get the facts. Submit your problem for a proposal.

THE LAST MILE

A new and dramatic highway safety film **"The Last Mile"** has been released by Caterpillar Tractor Co. and was shown for the first time on October 17 to the Construction Section of the National Safety Council in the annual Chicago meeting.

Caterpillar's latest contribution to safety education, the film is a 20-minute presentation which points out dangers involved when construction crews begin the job of turning an old overcrowded and poorly maintained road into a safe modern highway.

The new movie shows how the highway becomes doubly dangerous when construction begins, not only for the countless drivers who thread their way through the temporary construction zone but for the workers on the job as well. The film contains a message for both the motorist and the construction worker.

The release of the new film was made as Caterpillar was receiving the National Safety Council award for the firm's previous safety movie, **"The Perfect Crime."**

The new film is available from the nearest Caterpillar Dealer of Caterpillar Tractor Co., Peoria, Ill.

HOW IRON RUSTS

Steps in rusting of iron have been made clearer by purposeful corrosion of stainless steel.

Gradual solution of the protective surface of stainless steel samples in dilute sulfuric acid was found suddenly to give way to rapid corrosion at a definite electrical potential at about minus 0.4 volt, followed by a recovery process described as "ennobling."

Radioactive isotopes of iron and copper were used to follow the formation and solution of surface films on the special steel. The study was made by Dr. G. H. Cartledge of the chemistry division, Oak Ridge National Laboratory here. A preliminary report of his findings is reported in the British scientific journal Nature. (Jan. 28).

So completely does the new study explain the rusting and recovery processes that Dr. Cartledge is now able to start the ennobling process, if it is delayed, by any one of five methods. Earlier studies on corrosion have also had some puzzling features cleared up by this new research.

NEW CATALOGUE ON W-226 POWER UNIT

A new eight-page, two-color catalog (MS-455) which gives the design, engineering and performance story of the four-cylinder, 60 h.p. Allis-Chalmers W-226 power unit is now available from the Tractor Group, Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Included in the catalog are specifications, cut-away views of the power package and many of its components; photographs of the fan to flywheel unit, the open-style unit and the standard unit available to meet the specific installation requirement of the user; a listing of the special and extra equipment that increases the versatility and use of the W-226.

OGLEBAY, NORTON & CO. OPENS DETROIT OFFICE

Oglebay, Norton and Company, well-known Cleveland firm in the mining, lake transportation, dock facilities and the raw materials field, announced today the opening of a Detroit office at 1834 Guardian Building, Detroit, Michigan.

In the past the Company's bituminous coals have been marketed in Michigan through the Pine Ridge Coal Company which operated as exclusive Michigan coal sales agent. Coals for domestic, steam and by-product application, which Oglebay Norton and Company currently ships into Michigan via lake and rail, will be marketed through the new office. The establishment of this office will improve direct mine-to-customer service in supplying bituminous coal.

Mr. Paul G. Sullivan, widely known in the coal sales field, has been appointed manager of the new office. He has been associated with Oglebay, Norton and Company for 14 years as lake coal sales manager, and will continue in that capacity in addition to his other responsibilities. He will be assisted by Joseph M. Locher and Charles E. Bacon, operating out of the Detroit office, and Mr. John Glynn, out of the Saginaw, Michigan, office.

FOR SALE

A Roberts & Schafer Super-Air flow Pneumatic Coal Cleaner, 6 ft. wide x 4'6" long. For 75 P.H. of 1¼ by ⅜" raw coal. Plant located at Joanne Mine, Rachel W. Va.

For further information write or call

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1100 Union Trust Bldg.
Pittsburgh 19, Pa.

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111-M Marion 3½ yd. diesel shovel.
955 P&H 2-½ yd. diesel shovel.
7400 Marion Electric Dragline 200' boom, 8 yd.
625 Page diesel dragline 150' boom, 9 yd.
2400 Lima diesel dragline 130', 5 yd.
4500 Manitowoc diesel dragline 120' boom, 5 yd.
111-M Marion diesel dragline 80' boom, 4 yd.
1055 P&H diesel dragline 80' boom, 4 yd.
3500 Manitowoc diesel dragline 85' boom, 2-½ yd. bucket.
600 Reich Heavy truck mounted rotary drill
Quarrymaster Drill with 2-500 cu. ft. compressors.
58-BH Joy Champion Rotary Air Drill.
56-BH Joy Middleweight Rotary Air Drill
Also 42-T, 29-T, and 27-T Well Drills
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BONDED BUY

USED EQUIPMENT

Item 1255-C255—Caterpillar D8 Tractor. Machine is in good operating condition. Mounted with LaPlant-Choate Hydraulic Blade and Control. Equipped with crankcase guard, pull hook and canopy top. F. O. B. Clearfield, Pa. **$4,000.00**

Item 1055-P385—Caterpillar D8 Tractor, mounted with LeTorneau Straight Blade and Rear Control Unit. Machine is in operating condition, with fair running gear. F.O.B. Pittsburgh, .Pa **$3,000.00**

Item 1155-P391—Caterpillar D7 Tractor mounted with Cat 7S Straight Blade and LeTorneau Double Drum Cable Control Unit. Reconditioned gasoline starting engine; serviced and adjusted diesel engine; repaired starting bendix; replaced steering clutch seals and checked steering clutch brakes; replaced bellows seals on right side; tracks, rollers, sprockets and idlers are in new condition. F. O. B. Pittsburgh, Pa. CERTIFIED BUY **$9,000.00**

Item 655-P345—Caterpillar D7 Tractor, mounted with Rear Double Drum Cable Control & LeTorneau Angle Blade. This machine has good tracks, bottom rollers, sprockets and idlers; new master clutch; machine in good condition. F. O. B. Pittsburgh, Pa. **$3,500.00**

Item 455-B146—Caterpillar D6 Tractor equipped with LaPlant-Choate Angling Bulldozer. Rebuilt engine including new crankshaft and bearing; repaired left final drive, flywheel clutch, clutch linkage, track roller frame on right side. New hydraulic hoses, end bits and C-frame; tracks were pinned and bushed recently. F. O. B. Bradford, Pa. "CERTIFIED BUY" **$6,600.00**

Item 1155-P390—Caterpillar Model D4-60" gauge Tractor mounted with 4A Blade & #44 Hydraulic Control Unit & D4N Towing Winch. Installed new hydraulic lines, new bellows seals, installed new pins and bushings in track and new 4A bulldozer arrgt; electric starting for starting engine, crankcase guard; diesel engine is serviced valves adjusted, etc.; bottom rollers, sprockets and idlers are good; brakes and steering clutches are adjusted and in good operating condition. F. O. B. Pittsburgh, Pa. **$5,800.00**

Item 155-C189—Murphy Diesel Engine, Model ME6. Radiator to flywheel arrangement. Formerly in a Northwest Shovel. Completely rebuilt and guaranteed. F.O.B. Clearfield, Pa. BONDED BUY **$5,200.00**

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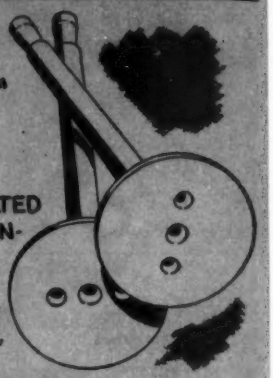
THE ARCH WITH ITS CAREFULLY SCULPTURED KEY-STONE WAS FIRST USED ABOUT 500 B.C. TODAY CENTURIES-OLD BUILDINGS USING THE KEYSTONE STILL STAND...A LONG-LIFE TRIB-UTE TO CAREFUL DESIGN AND WORKMANSHIP.

CAT VALVES GIVE "KEYSTONE" PERFORMANCE



CAT VALVES HAVE DEMONSTRATED THEIR QUALITY DESIGN AND MAN-UFACTURE BY SUCCESSFULLY WORKING FOR THOUSANDS OF HOURS. THEY ARE PRECISION-MADE OF SPECIAL LONG-LIVED, HEAT RESISTANT ALLOY STEEL.

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LIKE THE KEYSTONE, CAT ALUMINUM-ALLOY MAIN BEARINGS RESIST CORROSION, CARRY SEVERE LOADS, GIVE LONG LIFE, AND ARE MADE TO CLOSE TOLERANCES.

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BUCKHANNON PIKE, W. VA., ROUTE 20, (SO.) CLARKSBURG, WEST VIRGINIA

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Two Inch Suction Hose

25 foot sections, heavy duty suction hose with brass couplings. For sale at jobbers price of $36.94 per section.

MEYER BROS.

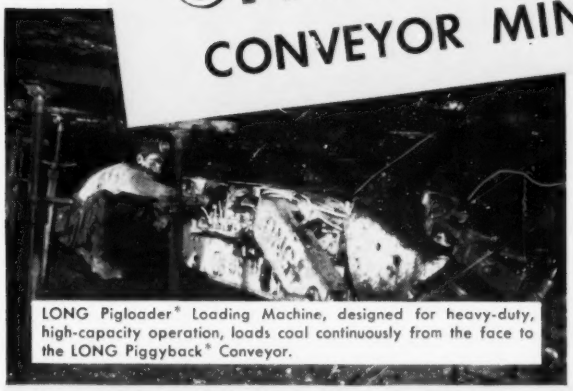
Phone 701, Philipsburg, Pa.

Coal Air Type Cleaner, 70 TPH-½"x1½".
850 HP Hoist-Drum, 12'x12', Electric Controls, A-1.
Jeffrey Coolmol Miner & Ext. Molveyor 440V.
3 Goodman CL512 Cutters, 9' Bar, 440V-AC, $6,750.00 for the lot.
Belknop Coal Washer, Complete 90 TPH, ½"x3" sizes.
Carpenter Dryer, Cent. type, 50 TPH, ½"x0".
Joy Continuous Miner, JCM3, 34" high, in good operating condition. Bargain for you.
Joy CD 25 Coal Drill on Rubber tires, excellent.
Joy Air Compressor on rubber tires, very good.
Joy 5-SC Shuttle Car, 500 volt, excellent.
Joy 11-B Cutter permissible, 150KW, MG Set.
Steel Bin, 80 ton, truck height, and 2 deck, V-screen.
GE 10 ton Locomotive, 42" gauge, A-1 condition.
Jeffrey Battery Locomotive, 6 ton, and charger.
5000 ft #8 2-Conductor Cable, approved.
Jeffrey 29U Cutters, track, bargain.
Myers-Wholey Loader, track, for heavy rock.
Lorain 820 Hi Front Shovel.
North West 80D Stripping Shovel, 2-yard.
Marion 111M 3½-yd. Diesel, a good buy.
Goodman 512 Cutters, 250V, on track, trucks.

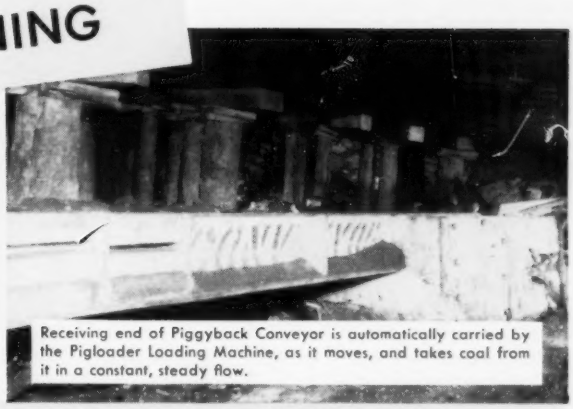
T. L. SIMPSON
Machinery Agent
1200 WOODBOURNE AVENUE
PITTSBURGH, PA. LEhigh 1-2254

Another successful installation . . .

PIGGYBACK®
CONVEYOR MINING

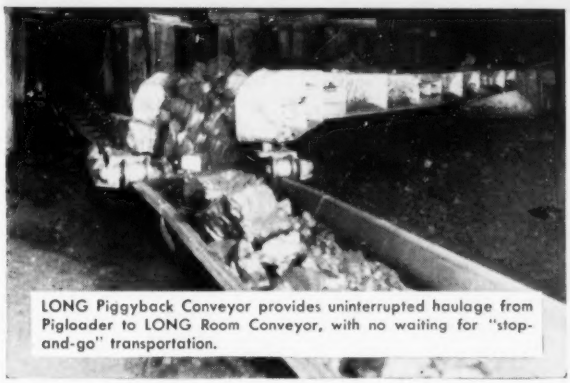


LONG Pigloader* Loading Machine, designed for heavy-duty, high-capacity operation, loads coal continuously from the face to the LONG Piggyback* Conveyor.

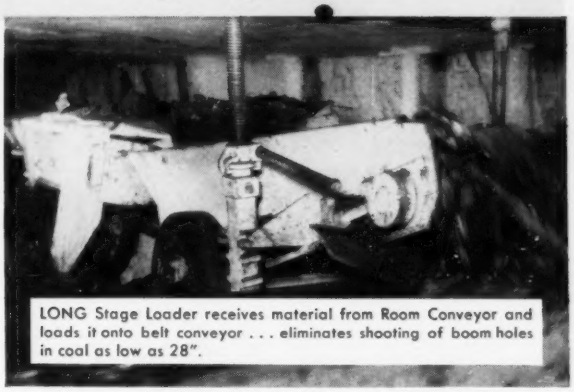


Receiving end of Piggyback Conveyor is automatically carried by the Pigloader Loading Machine, as it moves, and takes coal from it in a constant, steady flow.

Production boosted from 12 to 42 TPM with LONG Continuous-Haulage System



LONG Piggyback Conveyor provides uninterrupted haulage from Pigloader to LONG Room Conveyor, with no waiting for "stop-and-go" transportation.



LONG Stage Loader receives material from Room Conveyor and loads it onto belt conveyor . . . eliminates shooting of boom holes in coal as low as 28".

At this Kentucky mine, a six-man crew, utilizing the LONG Piggyback System in 36"-42" coal, is consistently producing 42 tons per man-shift (conveyor moves included). Prior to the installation of LONG equipment, production at this operation averaged out to only 12 tpm!

Results like these are typical with Piggyback Conveyor Mining. That's because this exclusive LONG development makes possible continuous transportation from the face to the outside. There are no delays whatsoever for car or buggy changes. In fact, with low-investment, low-maintenance Piggyback Continuous Haulage Mining, six hours or more loading time per shift is not unusual. If you would like more information on today's fastest growing method of mining, write us.

For details or a demonstration, write us today!

*Trade Marks

The **LONG** Company
OAK HILL, W. VA.

Developers and exclusive manufacturers of the Piggyback Conveyor System—America's fastest growing method of mining.

Here's How

Pilgrim Coal Co. boosts production...

▲ Digging in. The torque converter delivers smooth, steady power.

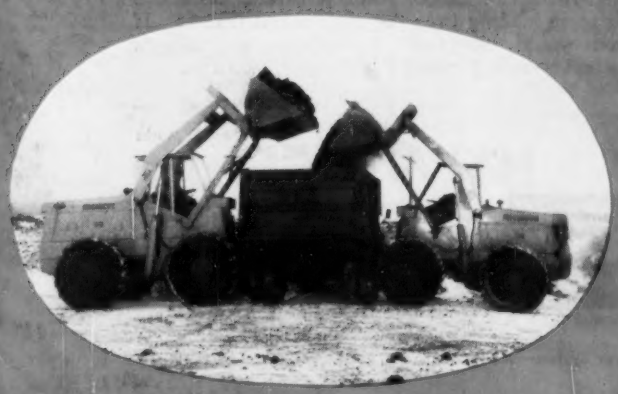
▲ Bucket of 175A holds well over 2¼ yards.

with MICHIGAN TRACTOR SHOVELS from Highway

Each Michigan 175A Tractor Shovel, used by *Pilgrim Coal Co.*, Volant, has a 2¼ cubic yard capacity bucket. With all-wheel drive, it is today's most powerful rubber-tired tractor shovel . . . plenty of power (133 h.p.) and balanced weight (24,100 lbs.) for the toughest digging.

AA-2666

▲ Pilgrim also uses a Michigan Model 75A.



▲ Michigan 175A and 75A work as a team to speed truck loading.

Highway EQUIPMENT COMPANY
6465 Hamilton Ave. • Pittsburgh 6, Pa.

Allis-Chalmers • International Vibro-Tampers • Erie Bins
General Motors Diesel Engines • Power-Pack Conveyors
Gar Wood • Lima Shovels, Cranes, Draglines • Master
Michigan Tractor Shovels and Excavator-Cranes
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